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A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

Vol. 12. No. 1554 — Entered as second-class matter Aug. 27, 1925, Post Office, N. Y., N. Y., Under Act of March 3, 1879. — NEW YORK, FRIDAY, SEPTEMBER 11, 1931 — 5 Cents. $12 Per Year

July Automobile Financing Shows Declines From 1930, Commerce Dept. Reports

Decrease of 17% From Corresponding Month Last Year; Total for First 7 Months 18% Less Than 1930

WASHINGTON, Sept. 10.—Automobile financing in July showed declines from 1930 in all categories, according to reports to the Department of Commerce from 402 financing organizations.

Cars financed at retail decreased 17 per cent. from the like month of 1930, compared with a decline of 22 per cent. from last year in June, while total cars financed at retail during the first seven months of the year were 18 per cent. less than in the like period of 1930.

Dollar volume of wholesale financing in July was 11 per cent. lower than in July of last year, compared with an increase of 8 per cent. shown in the June report.

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MACHINE TOOL MEN LOOK TO AUTOMOTIVE FIELD FOR UPLIFT

New York, Sept. 10.—While the machine tool industry has been through one of the most difficult periods that it ever has experienced, there are some evidences of better things ahead. Automotive Daily News recently announced that some important orders for machine tool equipment have been placed.

Now it is announced that the Lycoming Manufacturing Company has placed a machine tool order for two complete production lines, including the tooling for a new model engine. In Detroit it is said that certain companies are now doing some tool buying. A fair amount of business has been placed in that territory by body building plants. The Budd organization in Philadelphia is working its tool and die shop on three eight-hour shifts, with production lines waiting for the new equipment.

If Ford would come into the

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PNEUMATIC CASING SHIPMENTS IN JULY NEAR 1930 MARK

New York, Sept. 10.—Shipments of pneumatic casings for the month of July amounted to 5,461,908 casings, a decrease of 2 per cent. under June this year and show a negligible change as compared with July, 1930, according to statistics released by the Rubber Manufacturers Association, Inc., today.

This organization reports production of pneumatic casings for July to be 4,926,484 units, a decrease of 13.2 per cent., as compared with June this year, although 23.4 per cent. over July a year ago.

Pneumatic casings on hand July 31 amounted to 9,919,456 units, a

(Continued on Page 3)

FISK TIRE TO RESUME OPERATIONS SEPT. 14

Springfield, Mass., Sept. 10.—Production departments of the Fisk plant at Chicopee Falls are practically shut down for this week, but will resume on the 14th with the regular five-day week, which has been in effect. This closure has not affected the administrative departments.

Late News Flashes

Los Angeles, Sept. 10.—Gasoline is being sold in this city at 10 to 12½ cents a gallon again, with the major companies holding to a retail level of 16 cents. The trade generally believes that this marks a renewal of the so-called "bootleg gasoline war."

* * *

Pittsburgh, Pa., Sept. 10.—Dr. Harry Phillips Davis, vice-president of the Westinghouse Electric and Manufacturing Company, died at his home here yesterday at the age of 63. He had been ill several months following an operation.

* * *

Detroit, Sept. 10.—The employment index of the industrial department of the Detroit Board of Commerce as of August 31 shows 50, as compared with 53.32 on August 15 and 61.8 on July 31 of this year. On August 15 of last year the index was 83 and on July 31, 1930, it was 48. Factory shut-down for vacations and inventories were the cause of the August drop in the index.

Dealer Groups Will Co-operate As N. A. C. C. Sanctions Salon

NEW YORK, Sept. 10.—Preliminary announcement of the 1931-1932 stagings of the Automobile Salon discloses new arrangements of a most important nature. In New York and Chicago this veteran exhibition will be held under the auspices of and with the active co-operation of the Automobile Merchants Association of New York and the Chicago Automobile Dealers Association, respectively, and because of this new arrangement, has been officially sanctioned by the National Automobile Chamber of Commerce.

The dates and locations of the customary four stagings of the Automobile Salon for the coming season, which will be its twenty-seventh in America, are as follows: New York, Hotel Commodore, November 29 to December 5; Chicago, Hotel Drake, January 30 to February 6; Los Angeles, Hotel Biltmore, February 13 to 20; San Francisco, Palace Hotel, February 27 to March 5. After holding the Chicago Salon for the past two years in November, the date has been changed back to the week of the National Automobile Show in that city.

As heretofore, participation in the Automobile Salon will be strictly limited to high priced chassis and custom built coachwork. That it is an important factor in developing coachwork and in promoting sales of fine motor equipage, is attested by the new interest which the automobile industry is taking as evidenced by the co-operation of the dealer organizations and the National Automobile Chamber of Commerce sanction.

Speaking of this, Alfred Reeves, general manager of the National Automobile Chamber of Commerce, says: "The high priced chassis, mounting custom coachwork, occupies a distinctive place in the automobile business and dealer organizations would naturally be anxious to add its promotion to their various activities. Therefore, it is but natural and logical that they should welcome an opportunity to co-operate in its conduct, especially as the Automobile Salon has been proven a highly successful sales stimulant in this particular field, and a most important factor in coach-work development. They can help materially in making this famous exhibition better and more successful than before and to this end will work in close harmony with the management which has built the Automobile Salon up to its present important position."

This co-operation will be handled by Harry G. Bragg, general manager of the Automobile Merchants Association of New York, Inc., and A. C. Fach, general manager of the Chicago Automobile Dealers Association.

ARTIFICIAL BARRIERS SEEN BY BANKERS AS CHECK ON BUSINESS

New York, Sept. 10.—Trade and manufacturing activity in the United States has had some expansion in the last month, although probably little more than seasonal, according to the American Bankers' Association Journal, which finds that nearly every foreign country is suffering from the slump in foreign trade, the industrial depression and the unbalanced budgets.

The review of conditions continues:

"Many business leaders admit that prosperity is something that cannot be manufactured, but is an outgrowth of natural expansion of business freed from artificial restrictions. With the growing appreciation of the futility of all such schemes, the popular reaction is to demand their abandonment. The theories under attack, all artificial in their nature, range all the way from the advice to spend instead of save, and the doctrine that nominally high wages in idle plants can create purchasing power, to the Farm Board's attempt to stabilize

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GOV. ELY TO ISSUE SPECIAL CALL TO ACT ON INSURANCE

Boston, Mass., Sept. 10.—Gov. Joseph E. Ely in a radio address last night stated that he would call a special session of the Legislature to consider the present compulsory automobile insurance law and enact further legislation with respect to this law.

In his speech the chief executive said that the insurance companies in the aggregate have lost money since the creation of the law and "I am convinced perhaps, against my will and certainly against my wishes that upon the present

(Continued on page 3)

Higher Junking Bonus No Better Than Low, Says Head of N. A. D. A.

NEW YORK, Sept. 10.—Higher junking bonuses will not benefit the dealer any more than a low allowance, is the conclusion reached by C. A. Vane, general manager of National Automobile Dealer's Association, after a close study of the entire problem from all angles.

Beginning with the August 5 bulletin of the N. A. D. A., Mr. Vane set forth an unbiased report stating all reasons for and against the junking bonus plan. This analysis is concluded in the current bulletin, and the most favorable feature of the entire plan which Mr. Vane could discover was that "when a car is once demolished it can never again be traded in to another dealer at an over-allowance as a means of inducing a new car sale." In commenting on this feature of the Junking Bonus plan, however, Mr. Vane points out that the same results in this respect can be realized by a small junking allowance as by the larger allowance.

A more important section of the message, from the dealer's point of view, is his prediction that by 1940 automobile manufacturers will find themselves in a position where they will have to retail their own products themselves unless the dealers take some constructive means of meeting their problems and improving their methods.

Mr. Vane's statement is as follows:—

"John D. Rockefeller said that one of the reasons why the old Standard Oil Company was so amazingly successful was because the management was never 'afraid to face the facts.' Finding facts is one thing. Facing them is another. The automobile industry needs courage to face the facts of its own problems, too. We are just biting off one end and feeding it to the other when we try to increase new car sales by used car junking.

Advantages of Junking

"If junking has any value at all it is because:

"(a) It contributes something to highway safety by removing from traffic, automobiles that create or contribute to accidents.

"(b) When a car is once demol-

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Metals Congress Promises Biggest Event in History

Cleveland, O., Sept. 10.—With plans practically complete for the National Metal Congress and Exposition to be held in Boston during the week of September 21, under the sponsorship of the American Society for Steel Treating, it is evident that this year's event will surpass anything that has preceded it. Four other great technical societies are lending their support to the convention this year; our own Society of Automotive Engineers, the American Society of Mechanical Engineers, the American Institute of Mining and Metallurgical Engineers and the American Welding Society, being the four in question.

There have been scheduled fifty-six technical papers, which is an increase of 44 per cent. over the number presented last year. The exhibits will cover 60,000 square feet on the Commonwealth Pier. Arrangements have been made to operate gas and electric furnaces up to 2,550 degrees of heat. Welding operations will be carried on under operating conditions. The exhibits of materials, tools and

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Four Year Trend in Sales Operations

	1930**	1929*	1928*	1927*
Number of dealers reporting	2,234	2,782	677	638
New cars sold at retail	372,682	547,302	142,989	109,835
New cars sold on instalment	232,223	346,748	83,058	63,028
Used cars sold at retail	611,120	681,729	178,372	134,377
Used cars sold on instalment	395,872	443,757	111,606	86,017
Used cars junked	82,730	67,046	13,946	9,269
Used cars traded on new sales	279,729	398,243	102,064	79,633
Used cars traded on used sales	299,792	309,776	79,465	50,863
Total used cars bought	579,521	708,019	181,529	130,496
Average new sales per dealer	166.82	196.73	211.21	172.16
Average used sales per dealer	273.55	245.05	263.47	210.62
Average used cars bought per dealer	259.41	254.50	268.14	204.54
New cars on hand December 31, 1930	38.915	New cars on hand decreased 29.56% and		
New cars on hand December 31, 1929	56,826	used cars on hand decreased 13.39% in		
Used cars on hand December 31, 1930	74,399	the 12 mo. period. First compilation of		
Used cars on hand December 31, 1929	88,319	this information.		
Per cent. new cars sold on instalment	62.31	63.35	58.09	57.38
Per cent. used cars sold on instalment	64.78	65.09	62.56	64.01
Per cent. new cars sold with trade-in	75.06	72.76	71.37	72.50
Per cent. used cars sold with trade-in	49.06	45.44	44.55	37.85
Per cent. ratio used bought to new sold	155.50	129.37	126.95	118.81
Per cent. ratio used sold to new sold	163.98	124.56	124.75	122.34
Per cent. ratio cars junked to new sold	22.20	12.25	9.75	8.44
Per cent. ratio cars junked to used sold	13.54	9.83	7.82	6.89
Per cent. cars junked of total used bought	14.28	9.47	7.68	7.10

*From January 1 to September 30.
**January 1 to December 31.

(Reprinted from NADA Bulletin, April 5, 1931.)

Vane Sees High Junking Bonus as Poor Economics

(Continued from Page 1)

ished it can never again be traded in to another dealer at an over-allowance as a means of inducing a new car sale.

"(c) The dealer is spared the expense of handling a car whose total sale price is less than the cost and expense of buying it and reselling it.

"(d) Where a junking bonus is paid, as in Cleveland, upon a certificate showing that the junker has been destroyed by a salvage yard, another advantage exists that is not present in the common ordinary type of bonus plan. This additional advantage is that destruction of the car in a supervised yard guarantees that the scrap is actually returned to the metal market.

"Inasmuch as 55 per cent. of all American steel production is from scrap metal and only 45 per cent. from native ore it is quite evident that the largest iron mines in America are above the ground, not below it. It is estimated that the automobile industry produces 1,000,000 tons of scrap metal annually. Only a small percentage of this amount is actually being returned to the metal market.

"The factory bonus plan is worth developing for these four ideas, but in my opinion junking does not expand the total sales of new cars. Where the junking bonus is intelligently handled it will be used to expand the number of used cars junked by lowering the payments for each used car junked. The biggest benefit to dealers comes from the second advantage noted, that when once destroyed, a junker can never again be traded at an over-allowance. No one can estimate how much that means in dollars and cents, but it undoubtedly runs into the millions of dollars annually.

"These are the total advantages of junking. They are realized just as completely by paying $25 for a junker as when we pay $250 for a junker.

"To pay more is wasteful. An economic policy that tolerates waste may muddle along. But an economic policy that invites waste, that encourages more waste and finally deifies most waste, guarantees its own destruction.

"I made the statement in 1927 that unless fundamental changes were made in the trading methods in vogue in the automobile business in my opinion the day would come when automobile manufacturers would have to do their own retailing.

"In the NADA Bulletin of April 5, 1931, I made the statement that in my opinion this stage will be the year 1940 at the present increasing rate of used car sales to new, as shown by the table which is included in this article.

"Dealers are wasting their energy, creating imaginary problems and urging imaginary answers for trivial aggravations when there are real dangers ahead that should be gaining their most serious attention. To put all this fervor into junking plan agitation is comparable to a property owner worrying about a leaky faucet in a house that is directly in the path of an oncoming flood."

Junker Bonus Comment

A Massachusetts Dealer—May I make two observations in connection with the article "Will Increased Junking Bonus Solve Dealers' Used Car Ills?" No, not so long as a large percentage of the dealers insist on giving to purchasers a large portion of their legitimate profit in one of three forms:

(a) Excessive used car allowance on a car to be resold.

(b) Cash discount where no trade is involved.

(c) Over-allowing the fixed junk car allowance.

Dealers who today have a $50 allowance are giving away $75 and $100 to induce some one to buy a new car. Let us beware we do not drift into the position of the piano and radio industries, where God only knows what the top or bottom price is on a used car.

An Ohio Dealer: The junking allowance itself cannot be made large enough to accomplish the job dealers and factories thing it good for, that is, booming new car sales. When you talk sales to the average farmer in my territory he cannot buy because his wheat is 45 cents a bushel, milk 2 cents a quart, eggs 17 cents a dozen, pork 5 cents a pound. But his insurance and taxes are as high or higher than ever. In the same way the city worker is laboring fewer days per week and at less per day. The small retailer is selling his goods at prices to meet competition. With limited sales and short profit he is out of our market.

I see the junking fund as a most slimy substitute for intelligence and salesmanship.

A New York State Dealer—The socalled used car problem is no different today than it was ten years ago and I feel will be no different ten years hence. The dealer who will have the used car problem licked must have the following things in his favor:—

1. A product representing outstanding value in the price class. This is made possible by the manufacturer, and the manufacturer only.

2. An outstanding reputation for service and fair dealing.

3. Sufficient capital to be willing to pass a few deals by that are no good.

4. Enough courage to tell his manufacturer that he cannot sell the volume expected of him and sell poor deals in order to buy cars from the factory.

Many cars we wish to junk are not junkers. They are worth far more than $25. We cannot beat the laws of economics by trying to destroy unused transportation.

A California Branch Manager—From my view point astride the fence, half factory, half field, it seemed there was a genuine demand on the part of our dealers to match the helpful measures which they thought other factories were giving their dealers.

The demand of course did not

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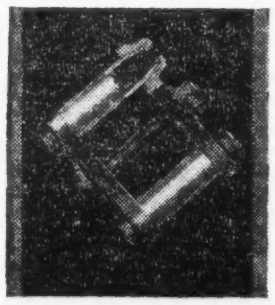
IMPROVED
Tryon
SPRING SHACKLES



Important new features embodied in Improved Tryon Spring Shackles result in greater inbuilt strength, greater accuracy, increased bearing surfaces, improved lubrication, easier riding and longer life.

Manufacturers: See mechanical specification tables in this issue for Tryon equipped cars. Write for information and quotations.

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SITUATION WANTED

GENERAL SALESMANAGER

Do you need a man 38 years old? One who has spent his entire business career in the retail automobile field. One who thoroughly understands the retail marketing of new and used cars. One who is capable of going direct to the dealer or distributor and helping in moving used cars, new cars and left over models. If you need such a man and you are willing to pay $10,000 a year for his services, write or wire Al. Hohneck, 6628 Elm St., Marienmont, Cincinnati, O.

P. S. Available September 1, 1931. You certainly must realize that the dealer needs such assistance this winter.

SPARKS from DETROIT

The Car Radio Helps

* * *

And Now Boat Racing

* * *

Shows Abroad

* * *

Road Groups Gather

Chris Sinsabaugh—Detroit Editor

IT'S a little late in the week to be writing about the Harmsworth trophy race on the Detroit River. The less said about the final result of this motor boat classic the better, but there was one happening of interest to automobile people that is well worth recording.

There were more than 200,000 people looking on when Kaye Don, in the English boat, turned over on the first lap, who couldn't understand what it all was about when Gar Wood was flagged down, leaving only one boat left, the one piloted by George Wood, to continue. Outside of the favored few on the docks at the yacht club and those on the Whittier roof none knew what had happened. There was no way of informing the vast multitude that it was a walk-over, so for some little time the spectators stood around and wondered. Then you could see the crowds on the shores diminishing in size—they had started to go home.

How the onlookers learned about the disqualification of Gar Wood and Don puzzled the favored few until it was discovered that many of the cars parked on Belle Isle were equipped with automobile radio and that the information had come to their owners from the broadcast of the Detroit News. It was just another bit of evidence of the growing use of the automobile radio. Without it the crowds would have stuck until dark.

* * *

W. K. VANDERBILT, JR., was one of the out-of-towners who came to the Harmsworth. To the automobile people his presence carried them back to the days when this millionaire railroad magnate was a godfather of motoring, the man who set up the famous Vanderbilt Cup for an international road race to improve the breed of motor cars. And it was this same Vanderbilt, driving his own car, who established the first world's straight-away mile record on the Florida beach. Now motor boating has become one of his hobbies.

Another spectator was "Dr. Ferdinand," none other than the grandson of the former emperor of Germany. He's been here for two years, working for Ford, but not until the other day, when he applied for a renewal of his driver's license, did Detroit know he was in our midst. Since divulging his identity the town's been his. He was one of the white-haired boys at the regatta.

* * *

AUTOMOBILE magnates, with the approach of October and the Paris Salon and the English motor car show, have been stricken with wanderlust. As many as can frame up a reason why they should go to Europe this fall are booking steamer reservations. One of the first to be announced is that of W. S. Knudsen, president of Chevrolet, who is expected to sail on the 23d, stopping off at Copenhagen, his home town, before he takes in the Salon, scheduled to open October 1. The English show comes two weeks later.

* * *

ALTHOUGH many leaves will have to be torn off the calendar before the big days arrive, plans already are under way for the twenty-ninth annual convention and road show of the American Road Builders' Association, which will be held in this city. The dates are January 11 to 15, and the affair is so big that it will be necessary to use the airport.

Preliminary arrangements for the affair brought to this city several of the big shots, among them Charles M. Upham, engineer-director of the association. Mr. Upham made us of the automobile industry feel good by telling that approximately one hundred million dollars more will be spent by state highway departments this year than last, and that 100 cities have reported an increase of a million and a half dollars in their 1932 road building campaigns.

* * *

JUST room for one more paragraph. Here it is, the contribution of Frderick Russell, well-known automobile column conductor, who writes from Lenox, Mass.: "Believe it or let it pass; yesterday I backed into Dodge Street, in order to turn around, but found it necessary to dodge a car coming out. The other car was a Dodge."

Truck Rental Business Inaugurated in Chicago

General Motors Subsidiaries Start Campaign to Operate on Long-Time Contracts With Responsible Concerns

GENERAL MOTORS, through its subsidiaries and other employees, is aggressively after the development of the truck rental business in Chicago and surrounding territory.

Verne C. Kennedy, formerly president of the Motor Mileage, Inc., Philadelphia and New York, is now associated with the Hertz Drivurself Stations, Chicago, in charge of the truck rental division. The Hertz Drivurself Stations is a subsidiary of the Yellow Truck and Coach Manufacturing Company, in turn a subsidiary of the General Motors Corporation.

P. L. Emerson, formerly Chicago branch manager and previous to that director of sales and advertising for the General Motors Truck Company, and Victor Phillips, former Philadelphia branch manager and previous to that general sales manager of the General Motors Truck Company, are also after the truck rental business in Chicago. They have made a connection with the Metropolitan Distributors' Corporation, New York and will operate under the plan of this New York company in the Chicago territory. Metropolitan Distributors was formerly owned by General Motors Truck Corporation, but is now owned by private interests, most of whom are executives or employees of the General Motors Truck Company.

It is understood in Chicago that the activities there are but a forerunner of an aggressive campaign nationally for the truck rental business. John Stedman, at the home office of the Hertz Drivurself Corporation in Pontiac, is now directing the formation of activities for the expansion of the business on a national basis.

The plans are not for the renting of trucks on the basis of hour to hour or day to day rental, the same as is prevalent in the passenger car rental business, according to the information obtainable in Chicago. Rather, it is said, the two companies, which, in Chicago, will be competitors, are to work on long-time contracts, periods of from three to five years, with financially responsible concerns. There is to be a guaranteed amount of mileage per truck per week, or per month, for the customer, who is likewise to pay during the term of the contract a fixed rental charge of so much per mile, depending on the type of contract and the rating of the truck unit used.

The customer inducement will be that no capital investment is required; that the customer at all times knows his exact mileage cost. The truck rental companies will hold out that their experience permits them to hold maintenance cost down to below that of what the customer can do it for and that their huge buying power permits them to buy parts, gasoline, oil, etc., at a greatly reduced cost from that of private concerns. The fact that so few private concerns actually do know their costs of operation works greatly in favor, it is said, of the truck rental companies. When the truck rental company representative actually presents to private concerns what their true transportation costs are, it is said the contract is easily obtained.

During the depression period those operators of taxicabs who have been losing large sums on taxicab operations, it is said, have helped to reduce the deficit by the profit to them in their truck rental departments.

KISSEL SERVICE SECTION SOLD TO FULLER & JOHNSON

Hartford, Wis., Sept. 10.—Announcement has been made of the sale of the service department of the Kissel Motor Car Company to Fuller & Johnson Corporation, Madison, Wis. The Madison concern has pledged to fully maintain the parts department for no less than two years.

The sale of the service department does not involve the buildings and equipment of the Kissel company. It is reported that these will come up for separate sale early in November. Manufacture of Kissel automobiles will continue for the present, it is stated.

FIFTY PENNSYLVANIA BUSES BANNED AS TOO BIG

Philadelphia, Sept. 10.—The Bureau of Motor Vehicles, State Highway Department, will remove from Pennsylvania highways at least fifty motor buses that have been found to exceed legal specifications. This action follows a conference between the bureau and representatives of bus companies. Recently, the bureau had motor patrolmen make a check of buses operating on state highways, to determine whether they were within the legal limit as to weight, length, width and height.

VANE SEES HIGH JUNKING BONUS AS POOR POLICY

(Continued from Page 2)

come from the general public, but the pressure of the public for used car overallowances was so strong that our dealers felt we should make our contribution. I consider the junking bonus a means of inducing the factory to participate in dealer used car overallowances, not specifically as something to create highway safety.

A Texas Dealer—A sum equal to about 5 per cent. of the wholesale price of the car should be set up by the factory on each car sold. This sum then would let a dealer junk one old car for each new one delivered.

Today we are junking about one car for every five new ones sold. This is too small a percentage of the junkers to make any dent on the total number that ought to be taken off the market.

A Minnesota Distributor—Automobile dealers just love to kid themselves, and do it on every possible occasion. The junking bonus is the present occasion.

An Indiana Dealer—A car that should be considered in the junking plan is the car that cannot legitimately be sold. Namely, the car that costs the dealer under $50, probably $20 or $30. In our experience we have about one of these for each six new cars sold.

I fear it will be greatly to the disadvantage of the dealer if the public becomes aware of the junking plan. It will insist on taking the advantage for itself. In a very short time the dealer will be no better off than before.

MACHINE TOOL MEN LOOK TO AUTOMOTIVE FIELD FOR UPLIFT

(Continued from Page 1)

machine tool market with some important buying, the industry would begin to feel convalescent. So far this organization has been buying special tools in small consignments and there has been no hint anywhere of comprehensive orders.

The machine tool industry has always had the automotive manufacturers as its star customers and any real improvement in the machinery field will only come when automotive buying again assumes its wonted proportions. For this reason machine tool makers are keenly interested in new model developments. If these are to be drastic enough to call for new tool and die equipment, the situation should soon look better. If they are to be merely refinements covered by minor changes in present equipment, the machine tool industry will have to look elsewhere for any immediate chance of improvement.

BUYS FORD DEALERSHIP

Carthage, N. C., Sept. 10.—Carthage Motor Company, local Ford dealership, has been acquired by W. H. Griffin. The former owner, H. G. Poole, will devote his attention to other business interests here.

HOFFMAN SEES CHANGE IN N. J. TRAFFIC CODE REDUCING ACCIDENTS

Trenton, N. J., Sept. 10.—Reduction in the number of motor vehicle accidents at street and highway intersections is bound to follow, in the opinion of Harold G. Hoffman, commissioner of motor vehicles, if right of-way rules as embodied in the amended traffic act are strictly adhered to.

One of the new regulations directs that the driver of any vehicle approaching an intersection shall give way to a vehicle which has entered the intersection.

"It means," said the commissioner, "that a motorist no longer may snatch the right-of-way merely because he is on the right of a driver on an intersecting road. Under the new law, the vehicle already in the intersection has the right-of-way over a vehicle approaching, but not already within the intersection, from the right. Only in the event of two vehicles entering the intersection at the same time does the vehicle on the right have the right-of-way."

Under another provision machines turning left at an intersection must yield to any vehicle approaching from the right, which is within the intersection.

METALS CONGRESS PLANS ELABORATE TECHNICAL PROGRAM

(Continued from Page 1)

equipment will be the most complete ever shown in this country.

Headquarters for the A. S. S. T., the A. I. M. E., the A. S. M. E. and the S. A. E. will be at the Statler Hotel, in Boston, while the American Welding Society will hold forth at the Copley Plaza.

Arrangements for registrations have been perfected which it is hoped will do away with long waits at the desks and general annoyance to delegates. Members of the A. S. S. T. will register and receive their badges admitting them to the exposition and technical sessions at Commonwealth Pier and ample facilities to obviate long waits will be available. Members of the S. A. E., the A. I. M. E. and the A. S. M. E. will register at the Statler. The Welding Society membership will find registration desks at the Copley Plaza.

Reservations have come in so rapidly that it is now evident that there will be in the neighborhood of 70,000 delegates in Boston for the congress and exposition.

WAUKESHA OPENS NEW SAN FRANCISCO OFFICE

Waukesha, Wis., Sept. 10.—A new district office in San Francisco has been opened by the Waukesha Motor Company, according to an announcement by S. A. Perkins, secretary-treasurer. Herbert Wirshing, former representative in Tulsa, Okla., has been named manager of the San Francisco office.

According to Mr. Perkins, the company formerly had a sales representative on the Pacific coast, but in an attempt to extend a more complete service, the new office was opened.

GOV. ELY TO ISSUE SPECIAL CALL TO ACT ON INSURANCE

(Continued from Page 1)

scheme of insurance the rates must go up."

Summerizing the things which he felt should be done, the governor said: "First, the commissioner should give consideration to a rearrangements of districts. Second, as a partial relief for an increase in 1931 rates the law should be changed to permit of a system of demerit rating by the imposing of an additional fee upon those who have been responsible for the tremendous losses. Third, as neither of the foregoing suggestions will reduce the present rates I recommend the study of this question by an authorized commission to be appointed by the governor.

"This commission should be instructed to give consideration to the formation of a private company authorized to write all of the compulsory insurance in Massachusetts, and in the absence of the co-operation of the insurance companies with this plan, to consider ways and means of making legal the establishment of a State fund so called."

These things, the governor said, cannot be done without further legislative authority and for this reason he intends to shortly call a special session of the legislature.

PNEUMATIC CASINGS SHIPMENTS IN JULY NEAR 1930 MARK

(Continued from Page 1)

decrease of 5.1 per cent. under June and 16 per cent below July 31, 1930. The actual figures are as follows:

Shipments	
July, 1931	5,461,908
June, 1931	5,571,886
July, 1930	5,447,295
Production	
July, 1931	4,926,484
June, 1931	5,672,463
July, 1930	3,991,321
Inventory	
July, 1931	9,919,456
June, 1931	10,447,210
July, 1930	11,811,647

Wisconsin Axles alone may never close a sale. But they certainly make selling easier—with their reputation for dependable service.

WISCONSIN AXLE CO.

OSHKOSH WISCONSIN

Brockway - Indiana Trucks Are in Step With the Advanced Methods of Present Day Delivery and Transportation Service.

The Brockway-Indiana principle of *flexible standardization* is the ultimate in building Motor Trucks.

Ask our nearest branch or distributor to give you the facts on this manufacturing principle, and how trucks are built to fit specific requirements of any industry.

BROCKWAY MOTOR TRUCK CORP.
General Offices
Cortland - - - - New York

Cumulative New Commercial Car Registration Statistics, August, 1931

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Federal	Ford	G. M. C.	International	La France Republic	Mack	Pierce-Arrow	Reo	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Delaware	1	1	39				42	2	13				3					1			1	103	Delaware
Illinois	1	1	361	31	40	3	452	25	93		8		13	4	2	8		4	6	1	26	1079	Illinois
Utah			20		3		32	4	9							1			1		1	71	Utah
Totals	2	2	420	31	43	3	526	31	115		8		16	4	2	9		5	7	1	28	1253	Totals
Delaware, '30	1	1	22		2		50	1	1				1		2			2			2	85	Del., '30
Ill., 1930	5	3	360	22	26	7	587	12	120	3	10		14	4	1		3	10	2	3	108	1300	Ill., 1930
Utah, 1930			25		2		67	4	4		1		2								2	107	Utah, '30
Totals	6	4	407	22	30	7	704	17	125	3	11		17	4	3		3	12	2	3	112	1492	Totals

Essex, FWD, Fargo, Paige, Relay and Rugby are now included in the Miscellaneous Column.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday and Monday by
AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
350 Hudson St., New York, N. Y.
O. J. Elder, President. H. A Tarantous, Vice-President. Alexander Johnston, Secretary.
Entered as second-class matter August 27, 1925, at the post office at New York, N. Y., under the Act of March 3, 1879.
350 Hudson St., New York, N. Y. Telephone CA nal 6-1000

Member A. B. C.

Mail subscriptions to CIRCULATION DEPARTMENT 350 Hudson St.
Subscription Rates—One year, $12.00; two years, $20.00, for United States and Canada, also Mexico, Cuba and Panama.
To Other Countries—One Year, $15.00; two years, $26.00 Single copies, 5 cents.

FRIDAY, SEPTEMBER 11, 1931

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What One Man Can Do

IN Automotive Daily News lately there appeared an announcement that the Ford Motor Company had called a further detachment of its workers back to the colors, so to speak. The story has it that this latest re-employment move has brought the total number of men at work in the Ford plant to 65,000, with further recruiting in prospect to make it 85,000 shortly. The normal employment in the Detroit Ford industries when the plants are on full time is probably about 105,000. So the prospective enrollment is not so far off normal.

We may remember that the mayor of Dearborn, a cousin of Henry Ford's, recently remarked that every man normally employed at the Ford plant who wanted a job would have one by the first of December.

The belief is general and for once logical that Ford will soon announce an improved Model A, longer wheelbase, greater comfort in seating, more power in the engine being the most notable changes that will be found. The fact that this belief has been held all year has nothing to do with the likelihood of its present truth, but this has had a considerable bearing on the decrease in Ford sales during 1931.

The greatest falling off in sales this year, on a comparative basis, has been in those of the Model A. We believe that much of this has been caused by the stories of the imminent arrival of a revised Ford car. Buyers who are definitely Ford prospects have held off because they have thought that a new model was due almost any week. We do not believe that the rest of the industry has taken up all this slack. Undoubtedly other cars in the lowest price bracket have benefitted, but there are still some hundreds of thousands of Ford buyers who are waiting to see what the Dearborn manufacturer purposes offering them.

If a revised Model A does put in an appearance during October or November, and the logic of the situation points to this, the recall of workers to the home plant, which produces most of the parts later assembled all over the country, being one of the indications, the Ford Motor Company will undoubtedly swing into heavier production and sales. We know of no other factor that would be more helpful in stimulating business revival than renewed Ford activity. The Ford organization reaches into every corner of the country. Reviving sales would put money in circulation from Maine to California and up and down the United States.

One very able financier remarked the other day that the continuation of the slump today was due to the fact that we didn't just know how to start the wheels moving again. An increase in business by the Ford organization would be a powerful factor in starting the wheels of general business, and that includes the business of other motor car manufacturers.

Sportsmanship

WHILE we doubt that the happening threatens another world war, it was rather too bad that the American entrants won the Harmsworth trophy in just the manner that they did. The brothers Wood are probably the two ablest drivers of racing motor boats in the world. Kaye Don, the Englishman, is comparatively a novice. When Gar Wood shot across the line nine seconds ahead of the gun, it was natural enough that Don should follow him, not realizing that he was automatically disqualifying himself and his boat, thereby losing the race to George Wood, who had only to go over the course alone.

Surely such a sport as motor boating, raised to the nth degree as it is with these speed demons, should be conducted with the most scrupulous regard for good sportsmanship. There ought to be an honest desire to see which is the faster boat, not which driver can play the sharpest trick. It is to be regretted that the regatta committee could not have found some more satisfactory solution of the affair.

New Rover Scarab to Sell In $420 Price Range

IN ITS new model, known as the Scarab," the Rover Company in England is offering innumerable interesting features of design and engineering. The price of this job has been brought down to about $420, so that it is an obvious attempt to give British motorists a satisfactory vehicle in what would be called the lowest price bracket, even in this country.

The innovations in design embodied in the Rover Scarab are an eight-horse power air-cooled two-cylinder power plant, mounted in the rear. There are no axles in the accepted sense of that term. Each wheel is sprung independently. The rear wheels are carried on arms extending from the frame. It is equipped with four-wheel brakes. The body is built comfortably to hold four people. There is no suggestion of a "midget" car about the Scarab. It gives the outward appearance of a full-sized small motor car, built along conventional lines.

A writer in the English motoring magazine, The Motor, after driving the new Rover product, says that he found ample leg room for his six feet of length. He says that he could sit with perfect comfort, with his legs stretched out. He also asserts that the rear compartment provided comfortable seating accommodations for the two passengers. He concludes: "Furthermore, the excellent leg room has not been obtained by raising the level of the seats in order to make the passengers sit in a more upright position, for all four occupants receive a fine measure of protection from the body sides, which are of normal height."

This Scarab model was developed by the Rover people with the utmost secrecy, actual construction being done in a private garage. Experimental work was done mostly after dark in quiet country lanes. As a result, until now nothing was known of the new vehicle, except that something radical was due from the Rover plant when the Olympic automobile show got under way in London. This is the first description of the Scarab, and because of the interesting departures from conventional in the design, we are quoting the British Motor:

"It is, however, in the chassis where the chief interest lies, for an entirely novel method of construction is employed and it may be said that the execution of the work is beyond reproach. Conventional arrangements for steering, road-wheel suspension, engine and transmission have been cast aside and a thoroughly modern design evolved which has, as its essential characteristics, robustness, simplicity and efficiency. The power unit, of course, is at the rear of the car—a fact which alone makes a demand for a special transmission system. There is one incidental feature which is well worth mentioning at this juncture—the floor of the rear compartment, although relatively low, is perfectly flat because, in a rear-engined car, there is no troublesome propeller shaft to require clearance space in the form of a tunnel.

"The engine, clutch, gearbox and final drive form a single unit which is as compactly arranged as it well could be without prejudicing the accessibility of any of the main components. The engine itself—an air-cooled Vee-twin, by the way—is the rearmost unit, then comes an inclosed single-plate clutch with a three-speed gearbox built into the housing and, finally, a pair of bevel gears, from the casing of which two half-shafts emerge to drive the rear wheels.

"As we have already said, each of the driving wheels (and those at the front, for that matter) are separately suspended, and it is interesting to note the ingenious and simple manner in which this form of suspension and drive has been coordinated. At the back of the chassis there is a stout cross-member which serves to brace the main frame together. Beneath this cross-member are two coil springs of large diameter (about four inches), one being placed at each side of the frame. At the lower ends of these springs the wheel hubs are placed. Axial, longitudinal and vertical location for the wheels is effected by four radius arms, which are mounted on the engine-clutch gear box unit, the swiveling points being approximately in line with the inner universal joints of the driving shafts.

"In this way the Rover designers have reduced unsprung weight to a minimum, for the whole of the 'back-axle unit,' as we know it in a normal design, is carried on the chassis. The brakes also are a sprung weight, and likewise the major portion of the driving shafts. This high ratio of 'sprung' to 'unsprung' masses unquestionably accounts for the excellent riding qualities of the car, which is one of its most notable features.

"Most motorists will remember that the Rover Company, immediately after the cessation of hostilities in 1918, produced an 8 horse power air-cooled car, which quickly became extraordinarily popular. Small wonder, therefore that in the production of this $420 model they have again decided upon an air-cooled power unit. The new engine is, of course, thoroughly modern in design and construction, and incorporates all the latest ideas which the dictates of experience have shown to be desirable. The cylinders, giving a rating of about 8 horse power, are mounted V-wise on a common crank case and carry inclined push-rod operated overhead valves.

"Cooling is effected by a fan mounted forward of the engine,

(Continued on Page 8)

COMING EVENTS

SEPTEMBER

8-17—**Utrecht, Holland.** Utrecht Fair bus and truck show.
9-10—**Toronto, Can.** National Association of Show Managers, convention.
11—**Charleston, W. Va.** West Virginia Motor Transport Association, meeting.
16-17—**Atlantic City, N. J.** National Petroleum Association, annual meeting. Hotel Traymore.
17—**Chicago, Ill.** Steel Founders Society, convention.
20-26—**Springfield, Mass.** Eastern States Exposition
21-25—**Boston, Mass.** American Welding Society, meeting. The following societies will participate: American Society for Steel Treating, American Welding Society, Iron and Steel Division, A. S. M. E.; Machine Shop Practice Division, A. S. M. E.; Iron and Steel Division, A. I. M. E.; Institute of Metals, A. I. M. E.
28-29—**Atlantic City, N. J.** National Association of Motor Bus Operators, fifth annual meeting. Hotel Ambassador.
26-Oct. 2—**Atlantic City, N. J.** American Electric Railway Association, annual meeting.

OCTOBER

1-11—**Paris, France.** International Automobile Salon.
2- 3—**Houston, Tex.** American Institute of Mining and Metallurgical Engineers, petroleum division meeting
7- 8—**Detroit, Mich.** Society of Automotive Engineers, national production meeting.
12-13—**Pittsburgh, Pa.** Pennsylvania Automotive Trades Association, convention.
12-16—**Chicago, Ill.** National Safety Council
14-16—**Pittsburgh, Pa.** Society of Industrial Engineers, convention.
14-15—**Albany, N. Y.** New York Automobile Dealers Association, convention
15-17—**Pittsburgh, Pa.** American Gear Manufacturers Association, convention
15-24—**London, England.** International Motor Exhibition, Olympia Hall.
19-22—**Chicago, Ill.** National Hardware Association, convention.
22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.
22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.
23—**New York City.** American Iron and Steel Institute, convention.
27-28—**Chicago, Ill.** American Railway Association, Motor Transport Division, meeting

NOVEMBER

Copenhagen, Denmark., Motorcycle truck and bus exposition.
5-14—**London, England.** International Commercial Motor Transport Exhibition, Olympia Hall.
10-12—**Chicago, Ill.** American Petroleum Institute, annual meeting, Hotel Stevens.
28-Dec. 9—**Brussels, Belgium.** Automobile Salon.
30-Dec. 4—**New York City.** American Society of Mechanical Engineers, annual meeting.

DECEMBER

7-12—**Atlantic City, N. J.** Motor and Equipment Association and National Standard Parts Association, Joint Trade Show.
9-11—**Atlantic City, N. J.** American Institute of Chemical Engineers, meeting.

JANUARY

11-14—**Detroit, Mich.** American Road Builders Association, twenty-ninth convention and show.
9-16—**New York City.** National Automobile Chamber of Commerce, National Automobile Show
9-17—**Los Angeles.** Annual Automobile Show of the Los Angeles Motor Car Dealers Association.
23-30—**Minneapolis.** Annual Automobile Show of Minneapolis Automobile Trade Association.
30-Feb. 6—**Chicago, Ill.** National Automobile Chamber of Commerce, National Automobile Show.

NATIONAL MOTORS EXHIBITS DAY-ELDER LINE AT FAIR

Trenton, N. J., Sept. 10.—The National Motors Manufacturing Company of Irvington is exhibiting four models of the new Day-Elder line of motor trucks and buses at the Trenton Fair this week. Special arrangements have also been made to exhibit a Day-Elder two-ton chassis on the race track between the events.

July Automobile Financing Shows Declines From 1930

(Continued from Page 1)

For the first seven months, wholesale financing was off 14 per cent. from 1930.

The following table gives number and volume of financing by months to date:

	1931		1930	
Total	No. cars	Volume	No. cars	Volume
January	160,620	$61,734,059	165,666	$73,473,303
February	173,108	66,180,619	199,323	85,564,278
March	237,429	92,054,520	315,443	123,587,977
April	290,270	113,045,193	346,590	146,700,652
May	278,118	109,426,139	294,290	115,225,047
June	*265,564	*104,698,405	340,872	138,207,191
July	236,795	92,974,660	286,745	118,819,832
Total (7 mos.)	1,641,904	$640,113,595	1,948,929	$801,578,280
New Cars				
January	58,519	$32,956,741	78,554	$45,155,063
February	67,616	36,865,326	95,433	52,926,897
March	102,686	55,035,647	139,189	77,235,940
April	133,376	70,560,629	171,032	93,935,742
May	125,745	68,571,359	115,563	68,181,709
June	*115,128	*63,565,852	159,649	91,122,753
July	100,897	56,293,556	130,659	73,458,525
Total (7 mos.)	704,967	$383,849,110	890,079	$502,016,629
Used Cars				
January	97,878	$27,245,446	80,758	$25,536,823
February	100,754	27,721,946	95,436	29,128,477
March	128,371	34,704,239	166,577	42,404,796
April	149,188	39,564,067	164,063	48,782,480
May	142,847	37,793,229	168,240	42,844,239
June	*141,982	*37,999,214	170,404	42,983,279
July	128,492	34,171,299	149,706	42,676,831
Total (7 mos.)	889,512	$239,199,440	995,184	$274,356,925

Wholesale Financing

	1931	1930
January	$40,164,672	$52,447,062
February	49,812,959	61,244,849
March	63,089,716	77,547,813
April	71,194,343	85,337,838
May	72,629,682	83,599,772
June	*58,178,419	53,802,394
July	48,894,753	55,319,248
Total (7 months)	$403,964,544	$469,298,976

*Revised.

Major Specifications and Mechanical Details of 1931 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Transmission Make	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Rear
*Am La France Chief	2½	3650	Own	L	6	3¾x5	331.0	33.7	65@2100	G	G & O	Borg	Spic	Ross	Str	Vac	DR	Own	4	Tim	Wo	31.2	B4IMV	—	156	6200	32x6	32x6D
*Am. La France Chieftain	3-4	6725	Own	L	6	4½x6	411.0	40.8	85@1800	G	G & O	Borg	Spic	Ross	Zen	Vac	DR	Own	4	Tim	Wo	28.5	B4IMV	—	175	7200	36x8S	36x8D
Am. La France Big Chief	6	5500	Own	L	6	4½x5½	678	48.6	115@1600	—	—	Own	—	Ross	Zen	Vac	DR	Own	4	Own	2 R	32.8	W4IA	—	226	10600	40x8S	40x8SD
Austin	400	475	Own	L	4	2.2x3	45.6	7.8	13@3000	G	Hex	Rock	Spic	Own	Til	Gra	Aut	W-G	3	Sal	Sp	5.25	O4M	76.5	75	1210	3.75x18	3.75x18
Autocar A	1½-2	3200	Own	L	6	4 x4¾	358.0	38.4	82@2400	G	Per	Long	Spic	Ross	Str	Vac	DR	Br-L	4	Own	Sp	27.9	LO4ID	460	150	5060	34x7	34x7
Autocar D	2-2½	3500	Own	L	6	4 x4¾	358.0	38.4	82@2400	G	Per	Long	Spic	Ross	Str	Vac	DR	Br-L	4	Own	2 R	33 5	LO4ID	460	150	5300	34x7	34x7D
†Autocar SH	2½-3	4300	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	44.0	O2IM	328	114	6770	34x7	34x7D
Autocar SCH	2½-3	4300	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	44.0	O2IM	328	157	6860	34x7	34x7D
†Autocar H	3	4100	Own	L	4	4½x5½	350.0	32.4	45@1450	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	48.6	O2IM	328	114	6770	34x7	34x7D
†Autocar HS	3½	4600	Own	L	4	4½x5½	350.0	32.4	45@1450	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	54.3	O2IM	516	114	7900	40x8	40x8D
†Autocar SHS	3-3½	4800	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	54.3	O2IM	516	114	7900	40x8	40x8D
Autocar SCH2	3-3½	4800	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	54.3	O2IM	516	157	8180	40x8	40x8D
Autocar N	3-3½	4600	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	41.2	OL4IH	574	174	7990	36x8	36x8D
Autocar TEA	3-3½	5350	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	12	Own	2 R	101.1	LO4ID	602	192	8900	36x8	36x8D
Autocar TFA	3½-5	6100	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	12	Own	2 R	101.3	LO4ID	602	192	9300	38x9	38x9D
Autocar C	3½-5	5500	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DA	Own	4	Own	2 R	51.7	O2IM	516	172	9500	42x9	42x9D
Autocar CE	7½	6000	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2R	51.7	LO4IV	670	172	10500	36x7S	40x8SD
Autocar F	7½	6800	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Br-L	Spic	Ross	Str	Vac	DR	Br-L	7	Tim	Wo	94.0	LT4DV	674	173	11000	36x7S	40x8SD
*Autocar G	10	9000	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Br-L	Spic	Ross	Str	Vac	DR	Br-L	7	Tim	Wo	100.0	T6IA	720	171	13000	36x8	36x8D
Brockway 60	*6000	995	Con	L	6	3⅜x4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	3	Col	Sp	19.8	B4IM	297	132	*3200	30x5	30x5
Brockway 65	6500	1195	Con	L	6	3⅜x4½	248.2	27.3	65@2700	C	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	3	Col	Sp	21.3	C4IM	244	137	3400	30x5	30x5
Brockway 75	7500	1290	Con	L	6	3⅜x4½	248.2	27.3	65@2700	C	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	4	Col	Sp	25.6	C4IM	244	137	3450	32x6	32x6
Brockway 90	9000	1525	Con	L	6	3⅜x4½	248.2	27.3	65@2700	C	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	4	Col	Sp	20.9	C4IM	292	149	4050	32x6	32x6
Brockway 120	12000	1990	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Tim	Sp	31.3	L4IH	353	156	5200	32x6	32x6D
Brockway 140	14000	2495	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	35.3	L4IHV	356	156	5500	32x6	32x6D
Brockway 141	17000	2935	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & G	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	46.2	L4IHV	356	170	6200	32x6	32x6D
Brockway 170	17000	3160	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	46.6	L4IHV	380	170	6800	32x6	32x6D
Brockway 175	17500	3660	Con	H	6	4⅜x4¾	427.5	45.9	100@2400	C	G & O	—	Spic	Ross	Zen	* P	Aut	—	5	Wis	2 R	45.3	L4IHV	380	170	7200	34x7	34x7D
Brockway 195	19500	3820	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	49.5	L4IHV	471	170	7500	34x7	34x7D
Brockway 190	19000	4185	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	Long	Borg	Spic	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	78.6	T2IMV	471	168½	7625	34x7	34x7D
Brockway 220	22000	4560	Con	H	6	4⅜x4¾	427.5	45.9	100@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	5	Wis	2 R	50.7	L4IHV	546	170	8200	36x8	36x8D
Brockway 250	25000	5950	Con	H	6	4⅜x4¾	427.5	45.9	100@2400	C	Long	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Tim	Wo	63.7	LT4IVA	664	182	10000	40x8	40x8D
Brockway 290	30000	7250	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	95.0	T4IA	676	182	10750	38x7P	40x14S
*Brockway 640	40000	9700	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	90.9	T4IA	864	212	14000	38x7P	36x10S
Chevrolet	½	355	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	3	Own	Sp	13.6	O4IM	101	109	*1880	19x4.75	19x4.75
Chevrolet	1½	590	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	O4IM	170	157	3015	30x5	30x5D
Chevrolet	1½	520	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	—	—	131	2700	30x5	32x6
Commerce Series S 11	1	1600	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Col	Sp	25.5	L4IH	297	142	3900	30x5P	30x5P
Commerce Series S 11	1½	1900	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4300	30x5P	30x5DP
Commerce Series 40	1½	2990	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4700	34x5P	34x5DP
Commerce Series S 11	2	2030	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4500	32x6P	32x6D
Commerce Series 40	2	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.6	L4IH	394	168	4900	32x6	36x6D
Commerce Series 40	2½	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	5100	36x6P	36x6D
Commerce Series 60	2½	4580	Bud	L	6	4⅛x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7000	36x6P	36x7D
Commerce Series 60	3	4680	Bud	L	6	4⅛x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7100	36x6P	38x7D
Commerce Series 80	3½	5250	Bud	L	6	4⅛x5½	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	—	—	175	8200	36x6S	36x12S
Commerce Series 80	4	5330	Bud	L	6	4⅛x5½	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	—	—	175	8400	36x6S	36x14S
Commerce Series 100	5	5830	Bud	L	6	4½x5½	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	95.0	—	—	175	9600	36x6S	40x14S
Day Elder 60	1	1095	Con	L	6	3⅜x4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Ross	Zen	P	DR	W-G	4	Tim	Sp	36.3	B4IM	241	135	*3200	20x6.00B	20x6.50B
Day Elder 85	1½	1645	Con	L	6	3⅜x4⅝	248.3	27.3	65@2700	C	Per	Borg	Spic	Ross	Zen	P	DR	W-G	4	Tim	Sp	42.3	L4IH	229	135	3750	20x6.00B	20x6.50DB
Day Elder 110	2	2095	Con	L	6	3⅜x4⅝	248.3	27.3	65@2700	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Sp	44.9	L4IH	306	156	4600	20x7.00B	20x7.00DB
Day Elder 130	2½	2895	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Sp	40.7	L4IH	354	157	6400	20x7.50B	20x7.50DB
Day Elder 160	?	3695	Con	H	6	4 x4½	339.3	38.4	82@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Wo	56.1	L4IH	398	156	6600	20x7.50B	20x9.00DB
Day Elder 200	4	4295	Con	H	6	4 x4½	339.3	38.4	82@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Wo	43.5	L4IHV	489	156	7400	20x9.00B	20x9.00B
Day Elder 240	5	5500	Con	H	6	4⅜x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	4	Tim	Wo	50.8	L4IHV	520	162	9300	38x9P	38x9DP
*Day Elder 285	8	6000	Con	H	6	4⅜x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	71.2	L6IHV	674	164	12000	20x8.25B	20x8.25DB
*Day Elder 345	10	7500	Con	H	6	4⅜x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	79.9	W6IA	400	164	12500	20x9.00B	20x9.00DB
*Day Elder 402	12	9000	Con	L	6	4¾x5¾	611.4	54.2	127@2300	G	Per	Br-L	Blo	Ross	Zen	P	DR	Br-L	7	Tim	Wo	84.6	W6IA	490	164	14000	20x9.75B	20x9.75DB
Diamond T 216	1½	695	Her	L	6	3⅜x4½	228.0	27.3	56@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Cla	Sp	—	L4IH	252	135½	3130	20x6.50B	20x6.50B
Diamond T 316	2	1095	Her	L	6	3⅜x4½	263	29.4	65@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	WG	4	Cla	Sp	—	L4IH	350	155	4400	20x6.50B	20x6.50DB
Diamond T 302	2-2½	1585	Her	L	6	3¾x4½	298.0	33.7	67@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	Cov	4	Cla	Sp	—	L4IHV	350	159¾	5000	20x7.00B	20x7.00DB
Diamond T 551	2½-3	2250	Her	L	6	4 x4½	339.0	38.4	74@2400	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Tim	Sp	—	L4IHV	408	168	5600	20x7.50B	20x7.50DB
Diamond T 504	3	2650	Her	L	6	4 x4½	339.0	38.4	74@2400	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Wis	2 R	—	L4IHV	408	176½	6400	20x8.25B	20x8.25DB
Diamond T 506	3	2950	Her	L	6	4¾x4½	383.0	43.3	85@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	—	L4IHV	408	184	6400	20x8.25B	20x8.25DB
Diamond T 602	3-4	3300	Her	L	6	4⅝x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	—	L4IHV	499	169	7500	20x9.00B	20x9.00DB
Diamond T 606	3-4	3400	Her	L	6	4½x4¾	453.0	48.6	100@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	—	L4IHV	499	187½	7500	20x9.00B	20x9.00DB
Diamond T 750	4-5	4650	Her	L	6	4⅝x5¼	529.0	51.3	—	—	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	—	W41	552	178	8300	22x9.75B	22x9.75DB
*Diamond T 801	4	4140	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Br-L	7	Own	Wo	—	L6IHV	571	189½	8300	36x8P	36x8DP
*Diamond T 1200	6	5600	Her	L	6	4½x4¾	453.3	48.6	100@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	—	T4IA	238	190	11000	34x7P	34x7DP
*Diamond T 1600	8	6220	Her	L	6	4⅝x4¾	479.0	51.3	104@2400	G	G & O	Cov	Spic-Blo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	—	T4IA	238	190	11700	36x8P	36x8DP
*Diamond T 1601	8	6500	Wak	L	6	5 x5¾	677.4	60.0	127@2000	G	G & O	Br-L	Spic-Blo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	—	T4IA	238	194	12500	36x8P	36x8D-
Dodge Bros. UF 30	½	435	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Own	W-G	Car	P	DR	Own	3	Own	Sp	14.2	L4IH	114	109	*2050	19x5.00	19x5.00
Dodge Bros. F 10	½	515	Own	L	6	3¼x4¼	211.5	25.3	66@3200	C	Fed	Borg	Un	W-G	Car	P	DR	Own	3	Own	Sp	14.2	L4IH	114	109	2100	19x5.25	19x5.25
Dodge Bros. U 1	¾	490	Own	L	4	3⅜x4¼	196.0	21.0	45@2800	G	Fed	Borg	Spic	Han	Car	Vac	NE	Own	3	Own	Sp	21.6	L4IH	189	124	3260	20x6.00	20x6.00
Dodge Bros. DA 1	¾	595	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Spic	Han	Zen	Vac	NE	Own	4	Own	Sp	36.8	L4IH	189	124	2360	20x6.00	20x6.00
Dodge Bros.	1	495	Own	L	4	3⅜x4¼	196.0	21.0	45@2800	G	Fed	Borg	Spic	Han	Car	Vac	NE	Own	3	Own	Sp	36.1	L4IH	205	133	2590	20x6.00	32x6
Dodge Bros.	1	595	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Spic	Han	Zen	Vac	NE	Own	3	Own	Sp	33.4	L4IH	205	133	2650	20x6.00	32x6
Dodge Bros. UF 30	1½	595	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	W-G	Car	P	DR	Own	4	Own	Sp	37.1	L4IH	120	136	2750	20x6.00	32x6
Dodge Bros. UF 31	1½	670	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	W-G	Car	P	DR	Own		Own	Sp	32.1	L4IH	229	165	2925	20x6.00	32x6
Dodge Bros. F 31	1½	770	Own	L	6	3¼x4¼	211.5	25.3	66@3200	G	Fed	Borg	Cle	W-G	Car	P	DR	Own		Own	Sp	32.1	L4IH	229	165	2975	20x6.00	32x6
Dodge Bros. F 30	1½	695	Own	L	6	3¼x4¼	211.5	25.3	66@3200	C	Fed	Borg	Cle	W-G	Car	P	DR	Own	4	Own	Sp	37.1	L4IH	120	136	2800	20x6.00	32x6
Dodge Bros. F 35	1½	1425	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	G	Long	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	L4IH	311	140	3975	20x6.00	20x6.00D
Dodge Bros. F 36	1½	1485	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	G	Long	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	L4IH	311	165	4175	20x6.00	20x6.00D
*Dodge Bros. F 40	2	1995	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	L4IH	350	150	5425	20x6.50	20x6.50D
*Dodge Bros. F 41	2	2085	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	L4IH	350	165	5465	20x6.50	20x6.50D
Dodge Bros.	3	1515	Own	L	6	3⅜x4½	241.0	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	L4IH	382	135	4235	32x6	32x6D
Dodge Bros.	3	1565	Own	L	6	3⅜x4½	241.0	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	41.4	L4IH	382	165	4520	32x6	32x6D
Dodge Bros.	3	1615	Own	L	6	3⅜x4½	241.0	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	L4IH	382	185	4715	32x6	32x6D
Dodge Bros. F 60	3	2645	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	2 R	48.8	L4IH	416	146	5835	32x6	32x6D
*Dodge Bros. F 61	3	2575	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	L4IH	416	170	6075	32x6	32x6D
*Dodge Bros. F 62	3	2695	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	L4IH	416	195	6190	32x6	32x6D
Essex Com.	¾	445	Own	L	6	2¾x4½	163.0	18.2	55@3300	C	Har	Own	Spic	Gem	Mar	Vac	Aut	Own	3	Own	Sp	—	4M	..	110	*2125	20x5	20x5.50
Federal D	1½	795	Con	L	4	3⅞x4¼	200.5	24.0	48@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L4IH	377	131	*3280	20x6.00	32x6
Federal E 6	1½	895	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	36.3	L4IH	377	132	3330	20x6.00	32x6
Federal F 7	1¾	1525	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	Own	4	Tim	Sp	29.2	L4IH	414	132	3810	30x5	30x5D
Federal A 6	2	1855	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Cla	Sp	38.5	L4IH	450	151	4635	32x6	32x6D
Federal A 6 T	2½	2185	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Tim	Sp	47.1	L4IHV	659	151	5185	32x6	32x6D
Federal A 6 T W	2½	2360	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Tim	Wo	52.8	L4IHV	659	151	5185	32x6	32x6D
*Federal D 8 W	2½-3	1050	Con	L	4	3⅞x4¼	200.5	24.0	48@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	566	140	3980	20x6.00	32x6
*Federal E 6 S W	2½-3	1150	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	566	145	4030	20x6.00	32x6
Federal T 10 B	2½-3	2740	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Sp	44.5	L4IHV	659	165	6645	34x7	34x7D
Federal T 10 W	2½-3	2915	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Wo	44.0	L4IHV	659	165	6645	34x7	34x7D
Federal T 10 D R	2½-3	2915	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	2 R	45.6	L4IHV	659	165	6645	34x7	34x7D
Federal U 6	3-3½	3860	Con	H	6	4 x4½	339.0	38.4	85@2200	C	Long	Borg	Pet	Ross	Str	P	DR	Br-L	7	Tim	Wo	64.6	L4IHV	676	165	7315	34x7	34x7D
Federal U 6 D R	3-3½	3960	Con	H	6	4 x4½	339.0	38.4	85@2200	C	Long	Borg	Pet	Ross	Str	P	DR	Br-L	7	Tim	2 R	69.6	L4IHV	767	165	7315	34x7	34x7D
Federal 4 C 6 A	4-5	4735	Con	H	6	4½x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	72.2	L4IHV	894	192	8460	36x8	36x8D
Federal 4 C 6 A D R	4-5	4735	Con	H	6	4½x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	2 R	80.6	L4IHV	894	192	8460	36x8	36x8D
Federal 4 C 6 A B	4-5	4960	Con	H	6	4½x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	72.2	T4IA	921	192	8980	36x8	36x8D
Federal 4 C 6 A B D R	4-5	4960	Con	H	6	4½x4¾	381.0	45.9	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	2 R	80.6	T4IA	421	192	8980	36x8	36x8D
*Federal U 6 S W	6	6000	Con	H	6	4⅜x4¾	380.9	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	71.3	L6IHV	1093	201	10395	34x7	34x7D
*Federal U 6 S W A B	6	6500	Con	H	6	4½x4¾	380.9	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	71.3	TrIA	867	201	10395	34x7	34x7D
Federal X 8	7⅛	5085	Con	L	4	5 x6	471.0	40.0	61@1350	G	Long	Borg	Pet	Gem	Zen	Vac	AB	Br-L	7	Tim	Wo	110.9	T2IMV	603	162	†9750	36x

Major Specifications and Mechanical Details of 1931 Commercial Cars

(CONTINUED FROM PAGE FIVE)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Make Transmission	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Rear
General Motors T 40	*15000	1845	Buick	H	6	3½x4½	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Own	4	Own	Sp	33.4	B4IM	524	141	4725	32x6P	32x6DP
General Motors T-44	*16000	1935	Buick	H	6	3½x4½	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Own	4	Own	2R	40.9	B4IM	524	141	4005	32x6P	32x6DP
General Motors T-43	*16000	1990	Own	H	6	3½x4½	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Own	4	Own	2R	50.7	B4IM	524	141	5050	32x6P	32x6DP
General Motors T-51	*19000	2565	Own	H	6	3¾x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Own	4	Own	Sp	40.6	B4IM	574	155	5955	34x7P	34x7DP
General Motors T-55	*19000	2690	Own	H	6	3¾x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Own	4	Own	2R	49.8	B4IM	574	155	6095	34x7P	34x7DP
General Motors T-60	*22000	3035	Buick	H	6	3¾x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Own	4	Own	Wo	52.5	B4IM	685	154	6935	34x7P	34x7DP
General Motors T-61	*22000	3445	Own	H	6	3¾x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Str	P	DR	Own	4	Own	Wo	52.5	B4IMV	685	154	6965	20x9.00B	20x9.00DB
General Motors T-82	*24000	3795	Own	H	6	3¾x5	331.4	33.7	94@2500	G	Long	Own	Pet	Sag	Str	P	DR	Own	12	Own	Wo	142.5	B4IM	793	155	7500	20x9.00B	20x9.00DB
General Motors T-83	*24000	3990	Own	H	6	3¾x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Str	P	DR	Own	12	Own	Wo	142.5	B4IMV	865	155	7670	20x9.00B	20x9.00DB
General Motors T-85	*26000	5000	Own	H	6	4¼x5½	468.0	43.3	115@2200	C	Long	Own	Spic	Sag	Str	P	DR	Own	4	Own	2R	53.3	B4IMV	665	171	10630	20x9.75B	20x9.75DB
†General Motors T-90	*28000	5235	Own	H	6	3¾x5	331.4	33.7	94@2500	G	Long	Own	Pet	Sag	Str	P	DR	Own	12	Own	Wo	129.0	BrIA	868	185	9400	20x7.50B	20x7.50DB
†General Motors T-95	*34000	7545	Own	H	6	4¼x5½	468.0	43.3	115@2200	C	Long	Own	Spic	Sag	Str	P	DR	Own	4	Own	Wo	53.3	B6IA	1191	189	13250	34x7P	34x7DP
†General Motors T-96	*34000	7195	Own	H	6	4¼x5½	468.0	43.3	115@2200	C	Long	Own	Spic	Sag	Str	P	DR	Own	4	Own	2R	81.1	B6IA	1191	189	12850	34x7P	34x7DP
Gramm A X 4	1	795	Con	L	4	3⅞x4	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	*3300	20x6.00	20x6.50
Gramm A X 6	1	895	Con	L	6	3⅜x6	214.0	27.3	61@3600	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3550	20x6.00	20x6.50
Gramm B X 4	1½	895	Con	L	4	3⅞x4¼	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3475	20x6.00	20x6.00D
Gramm B X 6	1½	995	Con	L	6	3⅜x4	214.7	27.3	61@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3725	20x6.00	20x6.00D
Gramm B	1¾	1495	Lyc	L	6	3¼x4½	224.0	25.3	61@2900	G	Per	Own	Blo	Ross	Zen	Vac	Aut	Cov	4	Tim	Sp	34.3	L4IH	278	140	4150	20x6.50	20x6.50D
†Gramm C X 4	2	1095	Con	L	4	4½x4¼	227.0	27.2	55@2600	G	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	3900	20x6.50	20x6.50D
Gramm 16	2	1095	Knight	S	6	2⅛x4⅜	177.9	20.7	53@2600	C	Own	Borg	Blo	Ross	Til	Vac	Aut	Cov	4	Eat	Sp	—	——	—	151	——	30x5	32x6
Gramm C X 6	2	1295	Con	L	6	3⅜x4½	248.2	27.3	70@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	4150	20x6.50	20x6.50D
Gramm 21	2½	1295	Knight	S	6	3⅜x4⅜	255.	27.3	70@2600	C	Own	Jon	Blo	Ross	Til	Vac	Aut	Cov	4	—	—	—	——	—	164	——	32x6	34x7
Gramm C	2	1795	Lyc	L	6	3⅜x4½	278.6	31.5	82@2600	G	Per	Own	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	31.0	L4IH	353	160	4800	20x7.00	20x7.00D
Gramm D	2½	1995	Lyc	L	6	3¾x4½	299.0	33.7	90@2200	G	Per	Jon	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	33.0	L4IHV	339	160	5200	20x7.50	20x7.50D
Gramm 75	3	2395	Knight	S	6	3⅜x4⅜	255.	27.3	70@2600	C	Own	Jon	Bla	Ross	Til	Vac	Aut	Cov	4	Wis	2R	—	——	—	190	——	20x7.50	20x7.50D
Gramm E	3	2595	Lyc	L	6	3⅞x5	353.8	36.0	90@2200	G	Per	Own	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	35.0	L4IHV	659	160	5950	20x8.25	20x8.25D
Gramm E Y	3	3595	Con	H	6	4¼x4¾	380.8	40.8	90@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	30.0	L4IHA	—	190	7200	20x7.50	20x7.50D
Gramm G Y	4	4345	Con	H	6	4⅜x4¾	428.4	45.9	100@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Wis	2 R	38.0	BW4IM	—	210	7700	20x8.25	20x8.25D
Gramm G W	5	5175	Con	H	6	4⅜x4¾	428.0	45.9	100@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Wis	2 R	—	4IA	864	157	9500	20x9.00	20x9.00D
Gramm H Y	5	6545	Con	L	6	4⅝x5¾	611.4	54.1	127@2300	G	Per	Ful	Blo	Ross	Zen	P	Aut	Ful	4	Wis	2 R	25.2	4IA	—	236	10100	36x8	36x8D
Indiana 60	*6000	995	Con	L	6	3⅜x4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Rmss	Zen	P	Aut	W-G	3	Col	Sp	19.8	B4IM	207	132	*3200	30x5	30x5
Indiana 64	6500	1195	Con	L	6	3⅝x4⅜	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	3	Col	Sp	21.3	C4IM	244	137	3400	30x5	30x5
Indiana 74	7500	1290	Con	L	6	3⅝x4⅜	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Col	Sp	26.6	C4IM	190	137	3450	32x6	32x6
Indiana 80	9000	1525	Con	L	6	3⅝x4⅜	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Col	Sp	20.9	C4IM	292	149	4050	32x6	32x6
Indiana 111 XW	12500	1850	Her	L	4	4 x5	251.3	28.6	46@2000	G	McC	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Wis	2 R	35.2	K3IM	270	139	3740	32x6	32x6D
Indiana 120	12000	1990	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Borg	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Sp	31.3	L4IH	353	156	5200	32x6	32x6D
Indiana 140	14000	2495	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Borg	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	35.3	5IHV	356	156	5500	32x6	32x6D
Indiana 141	17000	2935	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Borg	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	46.2	L4IHV	380	170	6200	32x6	32x6D
Indiana 170	17000	3160	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Borg	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	46.6	L4IHV	380	170	6300	32x6	32x6D
Indiana 175	17500	3660	Con	H	6	4⅝x4¾	427.5	45.9	100@2400	C	G & O	——	Spic	Ross	Str	P	Aut	——	5	Wis	2 R	45.3	L4IHV	380	170	7200	34x7	34x7D
Indiana 195	19500	3820	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	49.5	L4IHV	471	170	7500	34x7	34x7D
Indiana 190	19000	4185	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	Long	Borg	Spic	Ross	Str	P	Aut	Br-L	7	Tim	Wo	78.6	T2IMV	500	168½	7625	34x7	34x7D
Indiana 220	22000	4560	Con	H	6	4⅝x4¾	427.5	45.9	100@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	50.7	L4IHV	546	170	8200	36x8	36x8D
Indiana 250	25000	5950	Con	H	6	4⅝x4¾	427.5	45.9	100@2400	C	Long	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Wo	63.7	LT4IHV	664	182	10000	40x8	40x8D
Indiana 290	30000	7250	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	95.0	T4IA	676	182	10750	38x7P	40x14S
Indiana 640	40000	9700	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	90.9	T4IA	864	212	14000	38x7P	36x10S
International A 2	1½	675	Wak	L	4	3⅝x4½	186.0	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	39.5	BE4IM	212	136	*2935	5.50x20	6.00x20
International B 2	1½	725	Wak	L	4	3⅝x4½	186.0	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	Mec	3	Own	Sp	47.3	BE4IM	212	136	2960	5.50x20	6.00x20
International A L 8	1½	1450	Lyc	L	6	3¼x4½	224.0	25.3	52@2700	G	Mod	Own	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	42.9	B4IM	295	138	4032	20x6.00	20x6.00
International A 4	2	1860	Own	H	6	3⅝x4½	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	47.8	BE4IM	378	145	5221	32x6	32x6
International A 5	3	2550	Own	H	6	3⅝x4½	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	52.6	BE4IM	430	156	5895	34x7	34x7D
International A 6	3	2675	Own	H	6	3⅝x4½	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	62.5	BE4IM	430	156	6120	34x7	34x7D
International W 1	2½	3850	Hall	H	4	4¼x5½	312.0	28.9	59@2000	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	2 R	66.8	BE4IM	710	148	8300	36x5S	36x8S
International W 3	3½	4850	Hall	H	4	4¾x5½	390.0	36.1	69@2000	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	2 R	70.5	BE4IM	794	160	10125	36x6S	40x12S
La France Rep. A 1	6000	795	Lyc	L	6	3 x4¾	201.5	21.5	60@2500	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	36.1	L4IH	378	132	3000	20x5.50	32x6
La France Rep. C 1	7500	1295	Lyc	L	6	3¼x4½	224.0	25.4	61@2750	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	29.1	L4IH	413	144	3300	20x6.00	32x6
La France Rep. D 1	9000	1595	Lyc	L	6	3¼x4½	224.0	25.4	61@2750	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	37.9	L4IH	448	144	3725	30x5	30x5D
La France Rep. F-3	13000	2395	Lyc	L	6	3¾x4½	299.0	33.7	80@2500	G	Per	Ful	Spic	Han	Zen	P	Aut	Ful	4	Tim	Sp	40.1	L4IHV	628	174	5520	34x7	34x7
La France Rep. H 2	16000	2985	Lyc	L	6	3⅞x5	354.0	38.0	85@2300	G	Per	Ful	Spic	Han	Zen	P	Aut	Ful	4	Wis	2 R	41.6	L4IHV	658	174	6370	34x7	34x7D
La France Rep. M 2	20000	4000	Wak	L	6	4⅜x5½	462.0	46.0	97@2000	G	Per	Ful	Spic	Han	Zen	P	Aut	Ful	5	Wis	2 R	48.1	L4IHV	768	174	7500	36x8	36x8D
La France Rep. 35-2	24000	5600	Wak	L	6	4½x5¾	549.0	48.6	98@1850	G	Own	Ful	Spic	Han	Zen	P	Aut	Ful	4	Wis	2 R	45.4	L4IHV	870	174	9250	38x9	38x9D
Maccar 36 A	1½	1900	Bud	L	6	3¾x4½	298.0	33.7	83@2800	G	Per	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Tim	Sp	30.6	L4IH	315	171	4850	32x6	32x6D
Maccar 40 A	2	2400	Bud	L	6	3¾x4½	298.0	33.7	83@2800	G	Per	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Tim	Sp	38.8	L4IHV	325	171	5340	32x6	32x6D
Maccar 56	3	3350	Bud	L	6	3¾x5	311.0	33.7	72&2100	G	Per	Br-L	Spic	Ross	Str	Vac	DR	Br-L	4	Wis	2 R	37.4	L4IHV	411	183	6200	34x7	34.7D
Maccar 60	3	3950	Bud	L	6	4¼x5½	411.0	40.8	103@2100	G	Per	Br-L	Spic	Ross	Str	Vac	DR	Br-L	4	Tim	Wo	34.3	L4IHV	411	183	6600	20x9.00	20x9.00D
Maccar 66 A	4	5500	Her	L	6	4⅝x4¾	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	64.5	W4IA	617.5	206	8300	20x9.75	20x9.75D
Maccar 86 A	5	5950	Her	L	6	4⅝x4¾	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	72.3	W4IA	623	206	9500	20x10.50	20x10.50D
†Maccar SW-86	10	7650	Her	L	6	4⅝x4¾	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	72.3	T6IA	103	206	11700	20x9.75	20x9.75D
††Mack B L	——	2500	Own	L	6	3¼x5	246.9	25.3	63@2800	G	Own	Own	Spic	Gem	Str	Vac	NE	Own	4	Tim	Sp	Opt	L4IH	302	148	*4450	20x6.00B	20x6.00DB
††Mack B G	——	3000	Own	L	6	3⅝x5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Sp	Opt	O4IV	415	156	5200	32x6	32x6D
††Mack A B	——	4350	Own	L	4	4¼x5	283.7	28.9	60@2200	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2 R	Opt	O4IV	471	146½	7100	34x7	34x7D
Mack A B	——	4000	Own	L	4	4¼x5	283.7	28.9	60@2200	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	471	146½	8850	34x7	34x7D
Mack A B	——	4800	Own	L	6	3⅝x5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2 R	Opt	O4IV	471	146½	7050	34x7	34x7D
††Mack A B	——	4150	Own	L	6	3⅝x5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	471	146½	6850	34x7	34x7D
††Mack B C	——	5250	Own	L	6	4 x5½	417.7	38.4	100@2300	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	2 R	Opt	O4IV	471	154	8350	36x8	36x8D
††Mack B C	——	5500	Own	L	6	4 x5½	417.7	38.4	100@2300	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	610	154	8500	36x8	36x8D
††Mack B J	——	6150	Own	L	6	4½x5½	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	2 R	Opt	O4IV	507	168½	10100	36x8	36x8D
††Mack A K	——	5150	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	O4IV	492	162	9800	36x5S	36x5DS
††Mack A K	——	5250	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	2 R	Opt	O4IV	492	162	9700	36x5S	36x5DS
††Mack A C	——	4950	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	156	9500	36x5S	40x5DS
††Mack A K	——	6450	Own	L	6	4½x5½	525.5	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	2 R	Opt	O4IV	492	174	10950	22x10.50B	22x10.50DS
††Mack A C	——	5500	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	156	10100	36x6S	40x6DS
††Mack A C	——	6550	Own	L	6	4½x5½	525.5	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	Ch	Opt	O4IV	492	174	11950	24x10.50B	24x10.50DS
††Mack A C	——	6000	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	156	10450	36x7S	40x7DS
††Mack A P	——	9500	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	02IV	287	191	12200	36x7S	40x8DS
††Mack A K 6—6 wheel	——	9500	Own	L	6	4½x5½	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	2 R	Opt	ONIA	574	152-52	16300	9.75x22B	5.75x22DB
††Mack A C 6 wheel	——	7650	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	ORIV	574	125-52	13800	36x6S	40x12S
††Mack A C 6—6 wheel	——	9000	Own	L	6	4½x5½	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Owr	Ch	Opt	O6IA	574	145-52	14950	40x8	40x8D
Mack A P 6 wheel	——	11500	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	O6IA	574	145-52	15250	40x8	40x8D
††Mack A P 6 wheel	——	12000	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2 R	Opt	O6IA	574	145-52	——	22x9.75B	22x9.75B
Paige	½	*895	Own	L	6	3⅛x4½	207.0	23.4	66@3200	C	Long	Long	Un	Ross	DL	F	DR	—	3	——	Sp	14.2	4HI	264	115	†2350	18x5.50B	18x5.50B
Pierce-Arrow P T	12000	2950	Own	L	6	3¾x4½	298.0	33.5	70@2600	G	Long	Long	Cle	Han	Zen	P	DR	Cla	4	Tim	Sp	——	B4IMV	388	160	*5600	20x7.50B	20x7.50B
Pierce-Arrow P W	16000	4150	Own	L	6	4⅛x4½	361.0	40.3	77@2400	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	*Wo	——	W4IA	488	150	6650	20x9.00B	20x9.00B
Pierce-Arrow P X	24000	5375	Own	L	6	4⅝x4¾	479.0	51.3	103@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	——	W4IA	610	160	9300	20x10.50B	20x10.50B
Pierce-Arrow P Y	28000	5950	Own	L	6	4⅝x4¾	479.0	51.3	103@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Own	*Wo	——	W4IA	701	160	10675	24x10.50B	24x10.50B
Pierce-Arrow P Z	34000	6950	Own	L	6	4¾x5¾	611.0	54.1	130@2000	G	Long	Long	Cle	Han	Zen	P	DR	Own	4	Own	*Wo	——	W4IA	702	168	12800	36x7B	40x16B
Relay Series 15 AA	¾	1370	Con	L	6	3⅜x4	214.7	27.3	52@2200	C	Long	Borg	Blo	Han	Str	Vac	Aut	W-G	4	Own	2R	38.4	L4IH	297	131	3750	30x5P	30x5P
Relay Series 15 AB	1	1400	Con	L	6	3⅜x4	214.7	27.3	52@2200	C	Long	Borg	Blo	Han	Str	Vac	Aut	W-G	4	Own	2R	38.4	L4IH	297	131	3800	30x5P	30x5P
Relay Series S 11	1	1700	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	25.5	L4IH	297	142	4050	30x5P	30x5P
Relay Series S 11	1½	1900	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	30.0	L4IH	297	162	4500	30x5P	30x5DP
Relay Series 40	1½	2990	Bud	L	6	3⅜x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	34.5	L4IH	394	168	5300	34x5P	34x5DP
Relay Series 40	2	3240	Bud	L	6	3⅜x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	34.5	L4IH	394	168	5500	36x6	36x6D
Relay Series 50	2	3860	Bud	L	6	3⅜x5	331.0	33.7	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	5	Own	2R	58.5	L4IH	584	161	6800	36x6	36x6D
Relay Series S 11	2	2030	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	30.0	L4IH	297	162	4700	32x6P	32x6DP
Relay Series 40	2½	3275	Bud	L	6	3⅜x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	34.5	L4IH	394	168	5700	36x6	36x6D
Relay Series 50	2½	4000	Bud	L	6	3⅜x5	331.0	33.7	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	5	Own	2R	58.5	L4IH	584	161	7000	36x6	34x7D
Relay Series 60	2½	4555	Bud	L	6	4¼x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Own	2R	58.5	L4IH	584	175	7350	36x6	36x6D
Relay Series 50	3	4130	Bud	L	6	3⅜x5	330.0	33.7	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	5	Own	2R	58.5	L4IH	584	161	7200	36x6	40x8D
Relay Series 60	3	4595	Bud	L	6	4½x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Own	2R	58.5	L4IH	584	175	7500	36x6	38x7D
Relay Series 80	3	5170	Bud	L	6	4½x5½	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Cov	8	Own	2R	84.1	——	—	175	8400	36x6	40x10S
Relay Series 60	3½	4745	Bud	L	6	4½x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Own	2R	58.5	L4IH	584	175	7800	38x7	40x8D
Relay Series 80	3½	5330	Bud	L	6	4½x5½	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Cov	8	Own	2R	84.1	——	—	175	8600	36x6	40x12S
Relay Series 80	4	5380	Bud	L	6	4½x5½	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Cov	8	Own	2R	84.1	——	—	175	8800	38x7	40x14S
*Relay Series 50 SW	5	5505	Bud	L	6	3¾x5	331.3	33.7	64@2100	G	Long	Br-L	Blo

Major Specifications and Mechanical Details of 1931 Commercial Cars

(CONTINUED FROM PAGE SIX)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electrl System	Transmission Make	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Rear
Selden 67 C	5	4975	Con	H	6	4⅜x4¾	427.0	45.9	100@2400	C	Own	Br-L	Spic	Ross	Str	Vac	Aut	Br-L	7	Wis	2R	——	L4IHVA	—	171	8700	36x8	36x8D
Selden 77	7	7365	Con	L	6	4¾x5¾	611.0	54.1	127@2300	G	Own	Br-L	Spic	Ross	Str	Vac	Aut	Br-L	7	Wis	2R	——	BW41M	—	178	11600	40x8	42x9D
Service Series S 11	1	1600	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Col	Sp	25.5	——	—	142	3900	30x5P	30x5P
Service Series S 11	1½	1900	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4300	30x5P	30x5DP
Service Series 40	1½	2990	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4700	34x5P	34x5DP
Service Series S 11	2	2030	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4500	32x6	32x6D
Service Series 40	2	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4900	36x6	36x6D
Service Series 40	2½	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	5100	36x6P	36x6D
Service Series 60	2½	4580	Bud	L	6	4½x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7000	36x6	36x6D
Service Series 60	3	4680	Bud	L	6	4½x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	——	—	175	7100	36x6	38x7D
Service Series 80	3½	5250	Bud	L	6	4½x5½	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8200	36x6S	36x12S
Service Series 80	4	5330	Bud	L	6	4½x5½	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8400	36x6S	36x14S
Service Series 100	5	5830	Bud	L	6	4½x5½	410.9	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	95.0	——	—	175	9000	36x6S	40x14S
Stewart 30	1	695	Lyc	L	4	3¾x4½	199.0	22.5	50@2600	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	—	130	*3158	20x6.50	20x6.50
Stewart 30X	1	795	Lyc	L	6	3 x4¾	185.0	23.8	60@2800	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	—	130	3199	20x6.50	20x6.50
Stewart 40	1½	895	Lyc	L	4	3¾x4½	199.0	22.5	50@2600	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Cla	Sp	35.1	B4IM	—	130	3531	20x6.50	20x6.50D
Stewart 40 X	1½	995	Lyc	L	6	3 x4½	201.5	23.8	60@2800	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	—	130	3574	20x6.50	20x6.50D
Stewart 34 X	1½	1195	Lyc	L	6	3¼x4½	224.0	25.3	61@2600	G	Own	Borg	Spic	Ross	Str	P	DR	W-G	4	Cla	Sp	35.1	B4IM	—	145	3891	20x6.50	20x6.50D
Stewart 28 X	2	1495	Lyc	L	6	3¼x4½	224.0	25.3	61@2600	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	44.1	B4IM	—	136	4239	20x6.50	20x6.50D
Stewart 29 X S	2	1695	Lyc	L	6	3⅝x4½	278.0	31.5	85@2750	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	44.1	B4IM	—	145	5194	32x6	32x6D
*Stewart 18 X	2½	2690	Lyc	L	6	3⅞x5	310.0	36	85@2750	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Tim	Wo	48.1	B4IM	—	165	6245	32x6	32x6D
Stewart 32 X	2½	1990	Lyc	L	6	3⅝x4½	278.0	31.5	80@2500	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	46.1	B4IM	—	165	5552	32x6	32x6D
Stewart 35 X	3	2590	Lyc	L	6	3¾x4½	299.0	33.8	85@2750	G	Fed	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	46 1	B4IM	—	165	6224	20x8.25B	20x8.25D
Stewart 36 X	3	2990	Lyc	L	6	3⅞x5	354.0	36.2	90@2750	G	Fed	Borg	Spic	Ross	Str	P	DR	Br-L	4	Tim	Wo	105.1	B4IM	—	165	6864	20x8.25	20x8.25D
Stewart 48-8	3	2990	—	L	8	3¾x4¾	420.0	130.0	45@2800	G	Fed	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Cla	Sp	—	B4MV	—	170	6750	8.25x20B	8.25x20DB
Stewart 19 X	3½	3690	Lyc	L	6	3⅞x5	354.0	36.2	90@2750	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	12	Tim	Wo	105.1	B4IM	—	165	7474	34x7	34.7D
Stewart 38-8	3½	3990	Lyc	L	8	3¾x4¾	462.6	44.4	130@2800	G	Fed	Borg	Spic	Ross	Str	P	DR	Br-L	12	Tim	2R	105.1	B4IMV	—	170	7964	20x9.00	20x9.00D
Stewart 38-6	3½	3990	Wak	L	6	4⅜x5½	420.0	45.9	100@2000	G	Fed	Borg	Spic	Ross	Str	P	DR	Br-L	12	Tim	2R	105 1	B4IMV	—	170	7964	20x9.00	20x9.00D
Stewart 31 X	5	4990	Wak	L	6	4⅜x5½	516	51.2	105@2000	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	8	Tim	Wo	105.1	B4IMV	—	165	9885	36x6S	36x6SD
Stewart 27 X	7	5700	Wak	L	6	4⅜x5½	516	51.2	105@2000	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	8	Tim	Wo	105.1	B4IMV	—	165	10512	36x7	40x7D
Studebaker S-1	½	595	Own	L	6	3⅜x4½	221.0	27.3	70@3200	G	McC	Long	Spic	Ross	Str	P	DR	W-G	3	Own	Sp	16.4	B4IM	148	114	*2897	19x5.25	19x5.25
Studebaker S-20	1½	695	Own	L	6	3¼x4½	205.0	25.4	70@3200	G	McC	Long	Spic	Ross	Str	P	DR	W-G	4	Tim	Sp	36.2	B4IM	224	130	3044	20x6.00	32x6
Studebaker S-30	1½	775	Own	L	6	3¼x4½	205.0	25.4	70@3200	G	McC	Long	Spic	Ross	Str	P	DR	W-G	4	Tim	Sp	36.2	B4IM	224	160	3199	20x6.00	32x6
Studebaker S-40	2	895	Own	L	6	3¼x4½	205.0	25.4	70@3200	G	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	136	3825	20x6.50	20x6.50D
Studebaker S-50	2	920	Own	L	6	3¼x4½	205.0	25.4	70@3200	G	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	148	3855	20x6.50	20x6.50D
Studebaker S-60	2	945	Own	L	6	3¼x4½	205.0	25.4	70@3200	G	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	160	3909	20x6.50	20x6.50D
Studebaker 88	——	3295	Own	L	8	3½x4¾	367.0	39.2	115@3200	G	Long	Long	Spic	Ross	Str	P	DR	Ful	4	Eat	Sp	24.6	B4IMV	444	184	5413	20x7.50	20x7.50D
Studebaker 99	——	3795	Own	L	8	3½x4¾	337.0	39.2	115@3200	G	Long	Long	Spic	Ross	Str	P	DR	Ful	4	Eat	Sp	24.6	B4IMV	505	184	5680	20x7.50	20x7.50D
White 15B	*7,500	1545	Own	L	4	3¾x5½	226.4	22.5	31@1600	G	Own	Own	Spic	Own	Zen	Vac	L-N	Own	4	Own	Sp	18.6	O2XM	226	133½	2402	30x5	30x5
White 160	*8,000	1700	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4025	30x5	30x5
White 60	*8,000	1850	Own	L	6	3½x4½	260.0	29.4	54@2100	G	Own	Own	Mec	Han	Zen	Vac	DR	Own	3	Own	Sp	17.8	L4IH	276	138	3739	30x5	30x5D
White 161	*9,000	1850	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4290	34x7	34x7
White 162	*10,000	1900	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4360	30x5	30x5D
White 210	*10,000	2300	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4875	30x5	30x5D
White 61	*10,500	2450	Own	L	6	3¾x4½	299.0	33.7	51@2100	G	Own	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4789	30x5	30x5D
White 611	*11,500	2550	Own	L	6	3¾x4½	299.0	33.7	61@2100	G	—	—	—	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4980	20x7.00B	20x7.00DB
White 211	*11,500	2425	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	—	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5110	32x6	32x6D
White 213	*13,000	2700	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	—	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5230	34x7	34x7D
White 56	*13,000	3125	Own	L	4	4 x5¾	289.0	25.6	45@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	26.2	O2IM	268	165	5276	36x4	36x7
White 612	*13,000	2800	Own	L	6	3¾x4½	299.0	33.7	61@2100	G	—	—	—	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5100	20x7.50B	20x7.50DB
White 620	*15,000	4350	Own	H	6	4 x5¼	396.0	38.4	72@1800	G	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.8	O14IHV	—	157	7200	20x8.25B	20x8.25DB
White 51A	*17,000	3750	Own	L	4	4½x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	35.6	O2IM	335	170	6438	36x5	36x8
White 51AT	*17,000	3875	Own	L	4	4½x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	46.6	O2IM	335	134	6227	36x5	36x8
White 621	*18,000	4650	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	O14IHV	—	157	7700	20x9.00B	20x9.00DB
White 640	*20,000	6100	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	Sp	33.9	O4IA	—	180	9200	20x9.00B	20x9.00DB
White 630	*20,000	5000	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	—	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	O4IHV	554	168	8500	20x9.00B	20x9.00DB
White 55	*21,500	4650	Own	L	4	4½x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	66.1	OPXM	224	174	8737	36x5	40x5D
White 58	*22,000	4400	Own	L	4	4½x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	49.7	OPXM	224	180	7797	36x5	36x5D
White 641	*24,000	6450	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	46.9	O4IA	—	180	9700	20.9.75B	20x9.75DB
*White 630 SW200	*24,000	6280	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	—	Own	Spic	Ross	Zen	P	DR	Own	4	Tim	Wo	44.2	OTIHV	—	193	10000	20x8.25B	20x8.25DB
White 631	*24,000	5750	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	2R	56.9	O4IHV	—	168	9000	20x9.25B	20x9.25DB
White 52	*28,000	5100	Own	L	4	4½x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	58.4	OPXM	224	174	9409	36x6	40x12
White 52T	*28,000	4700	Own	L	4	4½x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	76.5	OPXM	224	129½	8461	36x5	40x5D
White 643	*32,000	6950	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	—	180	10900	24x10.50B	24x10.50DB
*White 642 SW310	*34,000	8045	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	—	Own	Spic	Ross	Zen	P	L-N	Own	4	Tim	Wo	85.6	OTIHV	—	198	12670	20x9.00B	20.9.00DB
White 642	*34,000	6750	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	—	180	10600	24x9.75B	24x9.75DB
*White 643 SW410	*40,000	8570	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	—	Own	Spic	Ross	Zen	P	L-N	Own	4	Tim	Wo	99.9	OTIHV	—	198	14400	40x8	40x8D
**White 60K	——	2200	Own	L	6	3½x4½	260.0	29.4	54@2100	C	—	—	Mec	Han	Zen	Vac	DR	Own	3	Own	Sp	17.8	L4IH	276	112	3700	20x7.00B	20x7.00D
White 601	——	1900	Own	L	6	3½x4½	260.0	29.4	54@2100	C	—	—	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	3825	20x7.00B	20x7.00D
White 602	——	2050	Own	L	6	3½x4½	260.0	29.4	50@1800	C	—	—	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4125	20x7.50B	20x7.50D
Willys 6-C-113	½	395	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	Own	3	Own	Sp	12.4	B4IM	143	113	1923	19x5.00	19x5.00
Willys 6-C-131	1½	595	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	40.8	B4IM	235	131	2625	20x5.50	32x6
Willys 6-C-157	1½	630	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	46.8	B4IM	235	157	2900	20x5.50	32x6

GENERAL NOTATIONS

†REFERENCE MARKS apply to individual lines only and explanations are given under the subdivision for each company in the "SPECIAL NOTATIONS."

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight, in pounds.

ENGINE—Bud, Buda; Con, Continental; Her, Hercules; Lyc, Lycoming; Pont, Pontiac; Wak, Waukesha; Wis, Wisconsin; Hall, American Car & Foundry.

VALVE ARRANGEMENT—L, "L" head; H, in head; O, overhead; T, T head; S, sleeve.

TYPE OF CAMSHAFT DRIVE—G, gear; C, chain.

RADIATOR MAKE—G & O, G & O Mfg. Co.; Fer, Perfex Corp.; Long, Long Mfg. Co.; Har, Harrison Radiator Corp.; Fed, Fedders Mfg Co.; McC, McCord Radiator & Mfg. Co.; Mod, Modine Mfg. Co.; Hex, Hexeel Radiator Co.

CLUTCH MAKE—Jon, Jones Clutch & Gear Co.; Ful, Fuller & Sons Mfg. Co.; Borg, Borg & Beck Co.; Br-L, Brown Lipe Gear Co.; Rock, Rockford Drill & Machine Co.; Cov, Covert Gear Co.; Long, Long Mfg. Co.; Detr, Detroit Gear & Machine Co.; Mer, Merchant & Evans; Hel, Merchants & Evans.

UNIVERSALS MAKE—Spic, Spicer Mfg. Co.; Blo, Blood Bros. Machine Co.; Sup, Superior Universal Products; Un, Universal Products Co.; Cle, Cleveland Steel Products Corp.; Pet, Peters; Opt, optional; Mec, Mechanics Machine Co.

STEERING GEAR MAKE—Ross, Ross Gear & Tool Co.; Han, Hannum Mfg. Co.; Sag, Saginaw Steering Gear Co.; Gem, Gemmer Mfg. Co.; Col, Columbus Gear & Pump Co.; W-G, Warner Gear Corp.

CARBURETOR—Car, Carter; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, gravity; Vac, vacuum tank; P, fuel pump.

ELECTRICAL SYSTEM—AB, American-Bosch; Aut, Electric Auto-Lite; Eis, Eisemann; L-N, Leece-Neville; NE, North East; RB, Robert Bosch; DR, Delco-Remy.

TRANSMISSION—Br-L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear; Cot, Cotta Gear Co.; Cla, Clark Equipment Co.

REAR AXLE, Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Pont, Pontiac; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—IG, internal gear; St, straight bevel; Sp, spiral bevel; Wo, worm; 2R, double reduction; Ch, chain; S-T, semi-transverse.

TYPE OF SERVICE BRAKES—B4IM, Bendix, 4 wheel, internal mechanical; B6IA, Bendix, 6 wheel, internal air; B4IMV, Bendix, 4 wheel, internal mechanical, vacuum; B2IA, Bendix, operating on 4 rear wheels, internal air; BW4IM, Bendix front, Wisconsin rear, 4 wheel internal, mechanical; BE4IM, Bendix front, Eaton rear, 4 wheel, internal mechanical; BO4IM, Bendix front, own rear, 4 wheel internal mechanical; B4IH, Bendix, 4 wheel, internal hydraulic; B4, Bendix, 4 wheel.

C4IM, Columbia, 4 wheel, internal, mechanical; K2IM, Clark, 2 wheel, internal, mechanical.

L4IHVA, Lockheed, 4 wheel, internal, hydraulic, vacuum, air; LO4ID, Lockheed, own, 4 wheel, internal, drive shaft; LO4IV, Lockheed, own, 4 wheel, internal, vacuum; LT4DV, Lockheed Timkin, 4 wheel, drive shaft, vacuum; L4IH, Lockheed, 4 wheel, internal, hydraulic; L4IHV, Lockheed, 4 wheel, internal hydraulic, vacuum; LT4IVA, Lockheed, Timken, 4 wheel, internal, vacuum, air; L6IHV, Lockheed, 6 wheel, internal, hydraulic, vacuum; L6IH, Lockheed 6 wheel, internal, hydraulic.

O2IM, Own, 2 wheel, internal, mechanical; O2IV, Own, 2 wheel, internal, vacuum; O4IA, Own, 4 wheel, internal, air; O4IM, Own, 4 wheel, internal, mechanical; O4IV, Own, 4 wheel, internal, vacuum; O4M, Own, 4 wheel, mechanical; O2XM, Own, 2 wheel, external, mechanical; O4XM, Own, 4 wheel, external, mechanical; OJXM, Own, jack shaft, external, mechanical; OL4IH, Own, Lockheed, 4 wheel, internal, hydraulic; OPX, Own, propeller shaft, external; OPXM, Own, propeller shaft, external, mechanical; OPM, Own, propeller shaft, mechanical; ORIV, Own, rear wheels, internal, vacuum.

S4IM, Steeldraulic, 4 wheel, internal, mechanical.

T4rIA, Timken, operating on 4 rear wheels, internal, air; T4IA, Timken, 4 wheel, internal, air; T6IA, Timken, 6 wheel, internal, air; T2IMV, Timken, 2 wheel, internal, mechanical, vacuum.

W4I, Westinghouse, 4 wheel, internal; W4IA, Westinghouse, 4 wheel, internal, air. W6IA, Westinghouse 6 wheel, internal, air. 4IA, 4 wheel, internal, air; 4IH, 4 wheel, internal, hydraulic; 4M, 4 wheel, mechanical.

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

***CHASSIS WEIGHT** according to Automotive Daily News formula, which is the chassis with gas, oil, water and spare tire, but without cab or other equipment.

TIRES—B, balloon; D, dual; S, solid; P, pneumatic.

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear; weight, 6,400. Price, $3,900.

Chieftain model also available as dump truck, 160-inch wheel base.

Balloon tires optional on Chief, Chieftain and Big Chief models.

AUTOCAR

*Engines in these models are located under the driver's seat.

BROCKWAY

*Six-wheelers.

CHEVROLET

Utility model available on 131-inch wheel base with chassis weight of 2,760 pounds and equipped with dual rear wheels.

DAY ELDER

*Six-wheeler.

Additional standard wheel bases are available on different models as follows:

85.....146,	168	240.....204	
110.....168,	186	285.....204	
130.....163,	187, 193	345.....204	
160.....165,	180, 204	402.....204	

DODGE

*Models F40, F41, F61 and F62 can be had with double drop frame.

DIAMOND T

*Six-wheelers.

Additional standard wheel bases available as follows:

551.....158	750.....167,	193	
504.....166½	801.....180½,	199¼	
506.....174	1200.....174½,	180	
603.....157, 179	1600.....174½,	180	
606.....177½	1601.....184		

F. W. D.

*Indicates six-wheel model.

The BTL and BT models are special line construction trucks in which complete provision for mounting AT and T earth boring machine, winch, body and other line construction accessories is included in the standard chassis.

Special power take-off transmission, which provides 3 power take-offs which may be operated in any transmission speed, optional on all models.

FEDERAL

*Six-wheelers.

†Solid tires standard. no spare rim or tire.

GRAMM

Series	Straight Rating	Wheel Base		Pay Load Range
AX 4	8,000	157	1	to 1½ tons
AX 6	8,000	157	1	to 1½ tons
BX 4	10,000	157	1½	to 2 tons
BX 6	10,000	157	1½	to 2 tons
CX 4	12,000	157–180	2	to 3 tons
CX 6	12,000	157–180	2	to 3 tons
B	12,000	157–174	1¾	to 2½ tons
C	14,000	145–196	2	to 3 tons
D	17,000	145–196	2½	to 4 tons
E	20,000	145–196	3	to 4½ tons
EY			3	to 4 tons
GY			4	to 5 tons
GW	26,000	157–240	5	to 7½ tons
HY			5	to 6½ tons

†Both the four and six cylinder are also offered in 157-inch wheel base at $1,145 and $1,345, respectively.

GENERAL MOTORS TRUCK

*Capacity indicated is the Straight Rating (combined weight of chassis, body, equipment and pay load) for which each chassis is designed and guaranteed to satisfactorily operate under average conditions. The size of the tires used does not affect this Straight Rating, but to secure maximum tire mileage it is suggested that the total gross weight be limited to a "recommended gross weight" for each tire equipment based on tire capacity. Prices cover base chassis and vary with wheel base and tire combinations. The number of wheel base lengths, tire types, range of "recommended gross weights" and resulting pay load range (assuming nominal body allowance) for each model follows:

Note: Models T-15 to T-61, inclusive, as well as models TX and WX, are available for export only as coach chassis.

Model	Wheel Bases	Tire Types	Range of "Recommended Gross Weights"	Pay Load Range
T-11	1	1	3800	½
T-15	3	10	4500– 6500	½–1½
T-19	3	22	6500– 8500	1½–2
T-25	3	17	6800– 9000	1½–2
T-26	4	..	8500–11000	2–3
T-30	3	15	10000–12500	2–3
T-31	4	..	11000–14000	2½–4
TX 186½	1	..	14000	
WX 185	1	..	14500	
T-42	4	12	12000–15000	2½–4
T-44	4	12	12000–16000	3–4½
T-45	4	..	13500–16000	3–4½
WX 215	1	..	17000	
T-51	4	..	16500–19000	4–5½
T-55	4	..	16500–19000	4–5½
T-60	4	18	18500–22000	5–6½
T-61	4	..	19500–22000	5–6½
T-82	4	19	19000–24000	5–7
T-83	4	..	20000–24000	5–7
T-85	3	..	22000–26000	5–7
T-90	3	7	22000–28000	5–7½
T-95	3	..	28000–34000	7–9
T-96	3	..	28000–34000	7–9

†Models T-90, T-95 and T-96 are six-wheelers, the latter having one driven and one trailing axle. Optional rear axle gear ratios available for all models. Double reduction axles available for Models T-60, T-61, T-82 and T-83.

INDIANA

*Six-wheelers.

MACK

Other wheel bases furnished on all truck models.

On 6-wheel jobs 4 rear wheels driven by chains, foot brake on 4 rear wheels.

††Made also in tractor models.

PAIGE

*Price includes panel or screen body. †Chassis weight given does not include gas, water, etc.

PIERCE-ARROW

*Optional final drive on Models PW, PX, PY and PZ.

REO

Models DF 129, DF, FA, FE and FF are available with duel wheels at additional cost.

*Models DF129 and DF 135 can be had with either 3 or 4 speed transmission.

SELDEN

Additional standard wheel bases are available on different models as follows:

Model 37C.....	162 and 161
39C.....	177 and 190½
47CB, 47CD..	151, 164 and 184
67C.....151,	164, 184 and 198

STEWART

Models 30 and 30X can also be supplied in 110, 120, 140 and 160-inch wheel base.

Models 40 and 40X can also be supplied in 110, 140 and 160-inch wheel base.

*Models 34X can be supplied in 135, 145, 160 and 176-inch wheel base.

Model 28X can be supplied in 130, 145, 160 and 176-inch wheel base.

Model 29XS can be supplied in 135, 160 and 176-inch wheel base.

*Models 18X, 32X and 36X can be supplied in 148, 190 and 220-inch wheel base.

*Models 19X, 31X and 27X can be supplied in 148, 172, 190, 220 and 235-inch wheel base.

As optional equipment Models 18X, 19X, 36X, 31X and 27X can be supplied with Timken dual reduction rear axle.

Models 38-8 and 38-6 can be supplied in 150, 160, 170, 196, 226 and 241-inch wheel base and worm axle.

STUDEBAKER

Maximum gross load, chassis, body and pay load for Model 88 to 12,500 pounds and for Model 99 is 14,000 pounds.

‡Hand brake same as foot brake, standard. Hand brake on drive shaft, special equipment.

WHITE

*

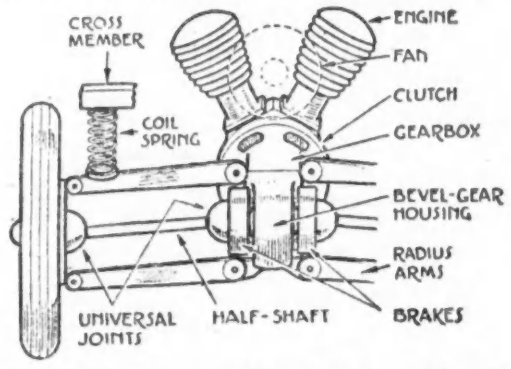
Production--Engineering--Factory

English Rover Builds $420 Car of Unique Design

(Continued from Page 4)

which draws air from beneath the car and delivers a draught past the cylinders and out through louvres in the rear bonnet.

"The installation of the carburetor on the T-piece formed in the Vee of the cylinders is neatly arranged, likewise the distribution and pump drives, which are also get-at-



ROUGH diagram showing rear end layout of the new Rover Scarab. The engine is at the extreme rear end of the chassis

able and sufficiently high up to insure protection from muddy and wet roads. There is quite a normal arrangement for the auxiliary drive, for a V-section belt connects three pulleys together, one mounted on the end of the crankshaft, another on the dynamo spindle on the near side of the engine and the third on the fan spindle in the center of the engine. Provision is made for belt adjustment by swinging the dynamo outward in a slotted mounting plate.

"Special precaution has been taken to keep all noise and smell right in the wake of the car. To this end the exhaust pipes run to a silencer placed transversely across the chassis at the rearmost extremity and in this way there is no possibility whatever of fumes entering the body. Simple connections are arranged for the clutch, brake and accelerator pedals.

"The suspension of the front wheels is extremely simple. Attached to the foremost extremity of the frame is a cross-tube of stout section which terminates at each end in a vertical pillar. Now the wheel hubs are provided with tubular members with the open ends pointing downward, which telescope over the extremities of the cross-tube, a connection between the two components being effected by means of twin coil springs to each hub. The springs, of course, are in tension, and in consequence can be of small diameter—a fact which greatly enhances the neatness of the arrangement and satisfies mechanical requirements.

"Steering is very light, indeed, despite the fact that it is relatively high geared. Front wheel brakes are housed in the hub fixtures, the internal expanding shoes being applied simultaneously with the rear brakes by the pedal. It might here be stated that external contracting bands are used at the rear, and they act on large diameter drums built on to the final drive casing in the power unit. In this way the torque reaction is not taken through the springs, but through the frame, which, of course, is an ideal state of affairs.

"A few words may be said on the score of appearance. The frontal aspect is certainly very imposing, for the bold dummy Vee radiator with its chromium-plated motif at the top forms the basis for thoroughly good bonnet lines, and, although the only purpose served is to accommodate the front passenger's and the driver's feet, there can be no question of unorthodoxy in appearance, despite the fact that the chassis layout is definitely planned on unconventional lines. Close-up mudguards, sufficiently large to be thoroughly effective, are installed, and the two doors which give access to both front and rear seats are wide enough to cause elderly people little or no inconvenience in getting into or out of the car.

"We had an opportunity of observing this car on test, following it in another car, necessitating a speed of 55 m. p. h. in places, while it could corner much faster than the following car. It sits the road in an extraordinarily safe manner. There appears to be little or no pitching, side sway, rolling or wheel patter, while it was evident when the driver deliberately let go of the steering wheel that the car must steer satisfactorily also."

New Gasoline Dispenser Developed by Ohmer Co.

A new type of gasoline dispenser which is about to be placed on the market, has been developed through the co-operation of the Davis Welding and Manufacturing Company of Cincinnati, manufacturers of gasoline tank truck equipment, and the Ohmer Fare Register Company of Dayton, manufacturers of recording devices.

An experimental installation of the new mechanism has been made at the Courtesy Service Station at 529 North Main Street, Dayton, O., so that engineers of the two companies can test and observe its performance in actual service. While no definite plans have as yet been made for the manufacture of the new dispenser, sufficient interest has been manifested by oil companies and motor transportation companies to insure its manufacture as soon as the present engineering work is completed, the makers state. According to present plans, the recording unit of the dispenser will be produced by the Ohmer company.

The dispenser not only measures and delivers the gasoline automatically, but it also keeps a positive record of the number of gallons dispensed and the corresponding money value based upon the price per gallon of gasoline. When delivery of gasoline is completed a receipt is issued to the customer showing the number of gallons purchased, the price per gallon in tenths of a cent where required by state laws, the total money value of the transaction, the quality of gasoline and a transaction number.

This same information is printed on a record strip within the machine, thus giving the station operator detailed information regarding each transaction. A total printing counter is provided, which gives totals for any period of both gallons of gas and money. The device is intended to protect the customer against error, either intentional or otherwise, and to afford the station operator an automatic control of gasoline dispensed and money received.

RIESS OFFERS COMPLETE WHEEL ALIGNING SET

The Riess Manufacturing Company, Dayton, O., announces a set of new scientific instruments for checking front end alignment. They are the result of years of experimental work, the manufacturer states, and are so easy to operate that any mechanic can quickly and accurately make a complete check-up on the front end of any car.

The set consists of a caster gauge, camber gauge, target, axle level gauge and a wheel alignment gauge. Each instrument is scientifically designed and manufactured. They are rigidly tested and checked by the most modern apparatus, assuring accuracy and reliability under all conditions. Uneven floors or worn tires do not affect their accuracy, as the actual plane of the car is obtained before tests are made. With these instruments, which are to be sold under the trade name of Riess Steer-O- Meter, the manufacturer states it is an easy matter to locate cause of "shimmy," hard steering, wandering, road shock and unnatural tire wear. They list at $115 for the complete set.

OIL TARIFF AND WORLD ZONING

THERE has just been issued by South American Oil Reports, Inc., 50 Broad St., New York city, a brochure by Michael O'Shaughnessy, editor of O'Shaughnessy's Weekly Oil Bulletin, entitled "Oil Tariff and World Zoning." Mr. O'Shaughnessy's thesis is the lack of any need for tariff or embargo on South American oil, as is the aim of the independent oil operators at the present time, since the imported oil fills the need for fuel oil and relieves the necessity of looking to high-grade domestic crude for this product.

In one paragraph he sums up this phase of the question, once and for all: "The skimming of high-grade midcontinent crude by refiners to get 25 per cent. of gasoline and 75 per cent. of fuel oil, when it is possible to recover from this oil 75 per cent. gasoline and 25 per cent. fuel oil, is a losing proposition to the refiners themselves and an unwarranted waste of the petroleum resources of the country and distinctly against the interests of the consumers in the Middle Western oil producing states."

We recommend this little book, which is priced at 60 cents, to every one who wants to understand the arguments against the tariff on foreign oil, which will undoubtedly come up from time to time.

ACCURATE PARTS ADDS VENTILATED INNER RINGS

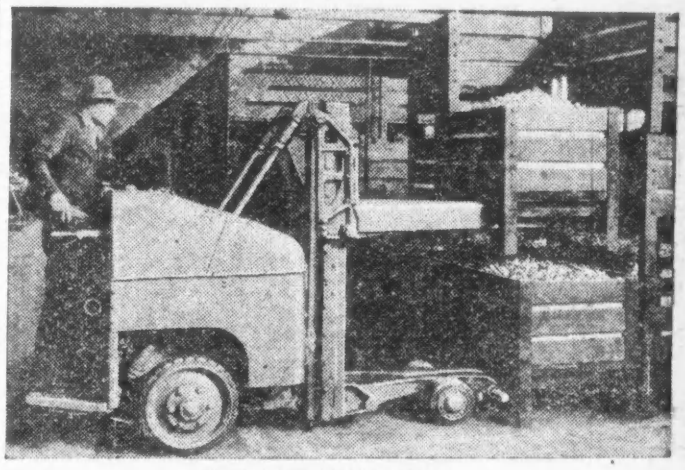
The Accurate Parts Manufacturing Company announces the addition of a ventilated inner ring to the accurate line of Peppy inner rings.

These newly developed ventilated inner rings are made of high carbon oil-tempered Swedish spring steel, it is stated, assure a heat resistance and springiness under all conditions. They serve a double purpose. First, to assure a positive and a uniform pressure all around the cylinder wall back of the piston ring. Second, to provide the proper ventholes back of the oil ring for the oil to flow back into the crankcase.

The placing of the vent holes at definite positions on each side of the apexes was done to provide a free, quick and easy passage for all excess oil to flow back into the crankcase.

Peppy ventilated inner rings are made in all widths and sizes. They can also be furnished to meet special requirements on short notice.

Clark Tructractor Adds New Tiering Truck



NEW Clark Tiering Truck

A tiering truck that steers with all four wheels, drives from the rear wheels and is powered with a tractor-type gas engine, said to be capable of twenty-four hours' continuous operation, is announced by the Clark Tructractor Company, Battle Creek, Mich.

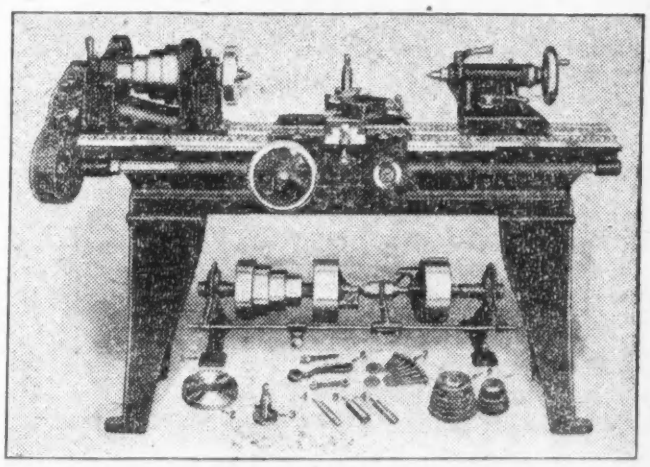
The new method by which all four wheels turn in response to the steering control enables the truck to get into tight places with its load and get away easily, it is claimed. The turning radius is 94 inches, and the truck will negotiate the corner of two intersecting 64-inch aisles with ample clearance on each side, the makers state.

The hydraulic lift applies maximum power to point of service without drums or other mechanisms. Besides utilizing all the advantages of the hydraulic lift, it is said to cushion the descending load without shock.

In commenting on the new model the makers say: "Intelligent use of this tiering equipment will enable a manufacturer, jobber or common carrier to make important savings in floor space by utilizing 'air rights.' Materials and equipment on skid platforms or in tote boxes are quickly moved from place to place and stacked in tiers. The 'Tiertop' model is especially recommended for factory and warehouse use. It tiers a three-ton load to six feet in thirty seconds. Heavy dies may be positioned on presses, heavy units in process may be positioned on machine tools, material for storage is quickly and compactly tiered.

"The 'Tiermor' model tiers three tons to four feet in eighteen seconds and, due to its low over-all height, is especially adapted to loading and unloading freight cars. It enters the car and takes the load to the far end, spots it where it is to ride and comes out of the car with no jockeying. Its flexible mobility and the construction, which permits the driver to have clear vision at all times, are recited as important advantages."

South Bend Lathe Adds New Service Station Unit



NEW South Bend 13-Inch Lathe

A new 13-inch lathe designed and adapted for general automobile maintenance work in the service station shop has been placed on the market by the South Bend Lathe Works, South Bend, Ind.

This new lathe, called the Thirteen-Inch Junior, has been relieved of many of the expensive lathe features and attachments not necessary for servicing work and has been built to care for general work and yet sell at a moderate price.

A variety of operations can be handled with this equipment, the more important being the turning of generator armatures, refacing of valves, finishing pistons, flange truing on axle and differential housings, bushing making and all kinds of drilling and reaming. It is a general purpose machine and can be ordered with automotive shop equipment to handle the jobs mentioned above.

This 13-inch Junior can also be used for truing the brake drums of the popular priced cars with demountable type wheels having brake drum integral with hub. Included on this list are: Ford A, Chevrolet, Essex, Plymouth, Pontiac, De Soto, Whippet and Dodge Six.

Machining of the drums is done by the mandrel and adapter method. With this method, a drum is trued concentric with the axle exactly as it will be in actual service.

Among the numerous attachments built for this lathe are raising blocks by which the capacity of the lathe swing can be increased to an 18-inch diameter, making possible the machining of drums on many other cars and trucks.